PREFACE

This manual covers installation and pre-delivery service procedures for the Honda BF115A and BF130A outboard motors.

Set-up, installation and pre-delivery service must be performed by an authorized Honda Marine Dealer. These instructions are provided for dealer use only.

FOLLOW THESE INSTRUCTIONS CAREFULLY
Proper set-up, installation and pre-delivery service are essential for safe, reliable operation. Your customer expects their Honda outboard motor to be correctly set-up, installed, adjusted, and ready for use. Test the outboard motor to be sure it is functioning properly. Fill out the HONDA MARINE Pre-Delivery Check List (#TM023) and give the yellow copy to the customer.

DO NOT OVER POWER THE BOAT
Do not install an outboard motor that exceeds the recommended maximum horsepower for the boat. Refer to the boat certification plate for the maximum recommended horsepower for the boat. For most boat applications, the motor should have a horsepower which provides 80% of the maximum recommended horsepower for the boat. If the certification plate information is not available, contact the boat manufacturer.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice.

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BF115A · BF130A OUTBOARD TYPES

It may be necessary to refer to the chart below for reference purposes.

Model	Type	Shaft Length L	Shaft Length X	Standard Rotating Propeller Shaft	Counterrotating Propeller Shaft	Power Trim/Tilt	Tachometer	Trim Meter
BF115A	LA	●		●		●		●
	XA		●	●		●		●
	LCA	●			●	●		●
	XCA		●		●	●		●
BF130A	LA	●		●		●		●
	XA		●	●		●		●
	LCA	●			●	●		●
	XCA		●		●	●		●

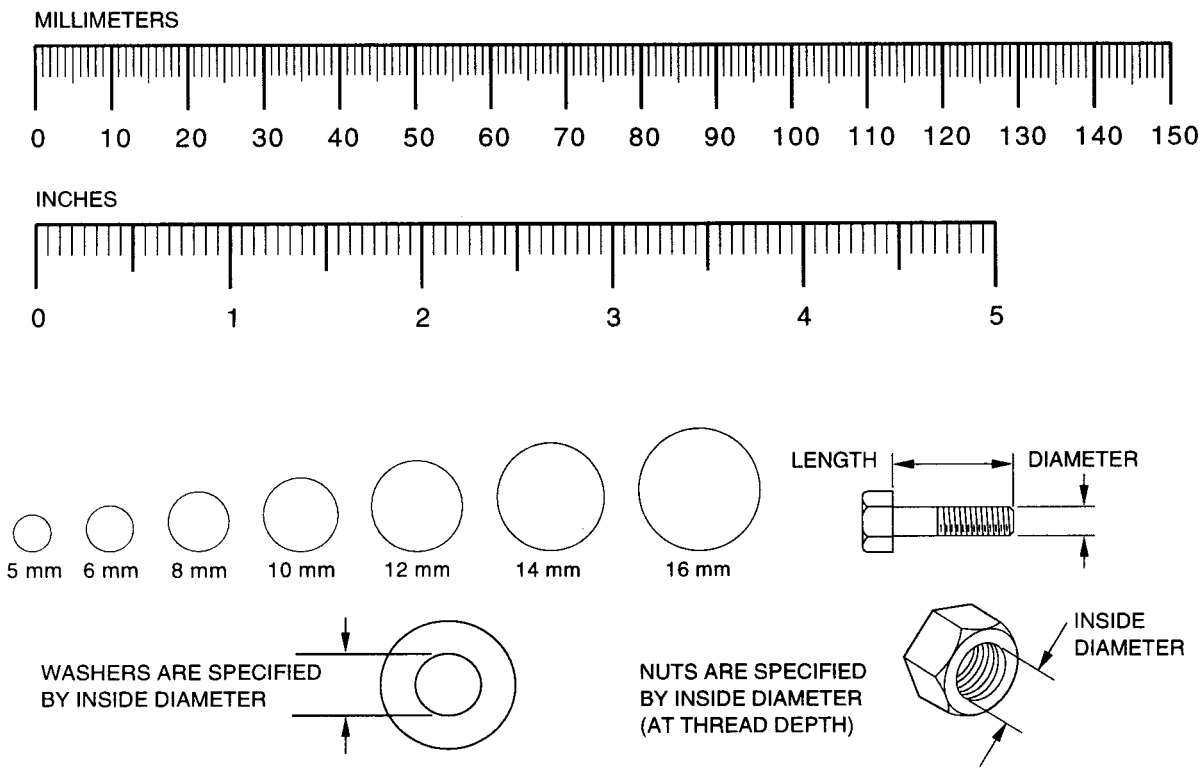
TYPE CODE (example)

L C A

- A — Destination -- A = America
- C — Propeller shaft rotating direction -- C = Counterrotating, None = Standard rotating
- L — Shaft length -- L = Long shaft, X = Extra Long Shaft

HARDWARE MEASUREMENT

How to measure hardware and components:



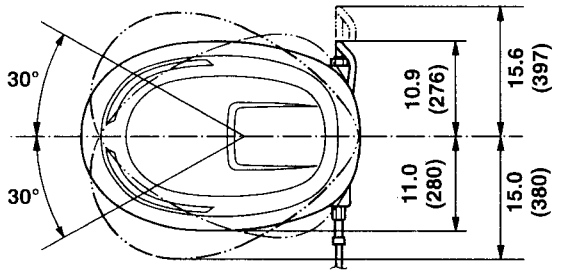
TORQUE VALUES

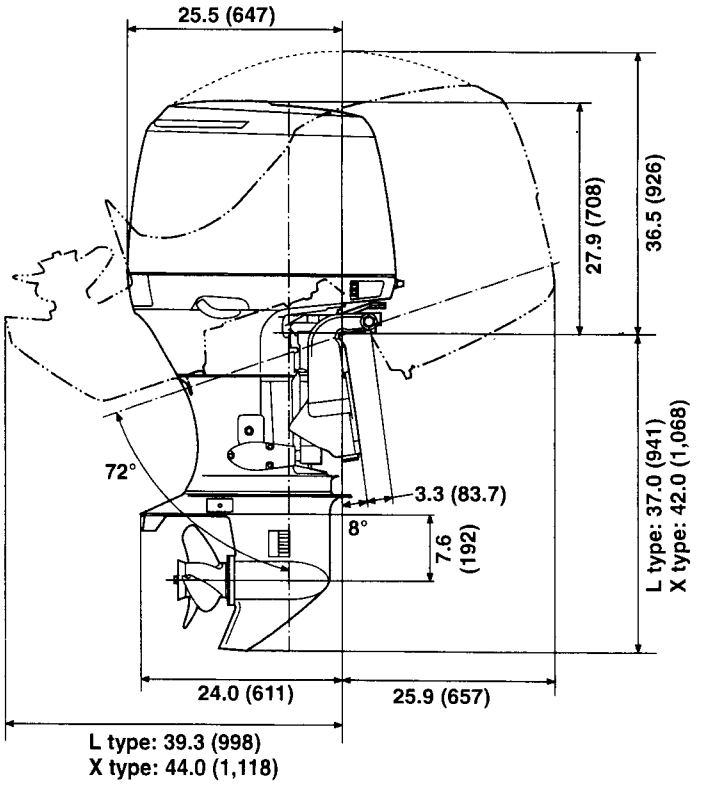
FASTENER APPLICATION	DESCRIPTION	TORQUE VALUES		
		ft-lb	kg-m	N·m
Propeller lock nut	Minimum torque	7	0.1	1
	Maximum torque	33	4.5	44
Separate cover bolts	6 x 30 mm (2)	9	1.2	12
	6 x 40 mm	7	1.0	10
Steering link arm bolt	3/8 in, 24 UNF	16	2.2	22
Steering plate nuts (2)	10 mm self-locking	25	3.5	34
Stern bracket mounting bolts (4)	12 x 119 mm	40	5.5	54
Standard hardware	5 mm screw, bolt, nut	3.6	0.5	4.9
	6 mm screw	6.5	0.9	8.8
	6 mm bolt, nut	7.2	1.0	9.8
	6 mm flange bolt, nut	8.0	1.1	10.8
	8 mm bolt, nut	15	2.1	21
	8 mm flange bolt, nut	16	2.2	22
	10 mm bolt, nut	25	3.5	34

Torque values for special hardware will be called out during procedure.

DIMENSIONAL DRAWINGS

Unit: in (mm)

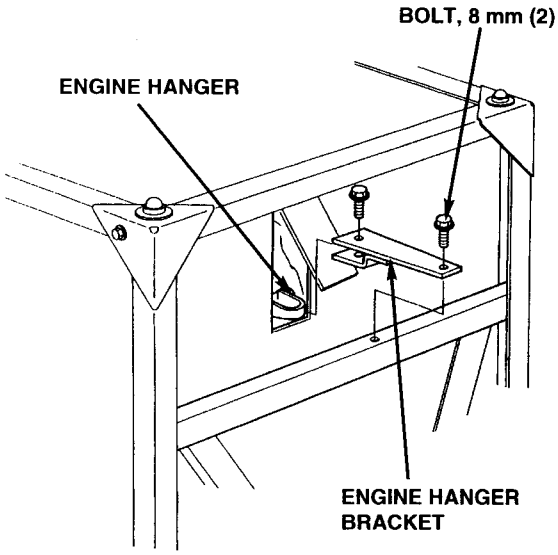




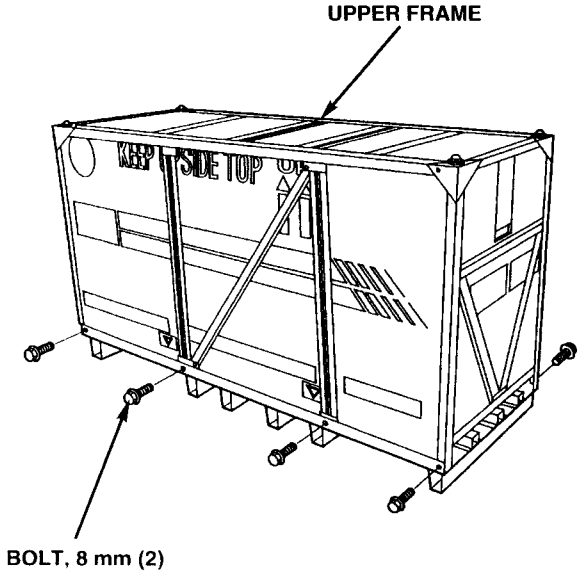
UNPACKING

Wear heavy gloves during unpacking to protect your hands from sharp edges and burrs on the steel crate frame.

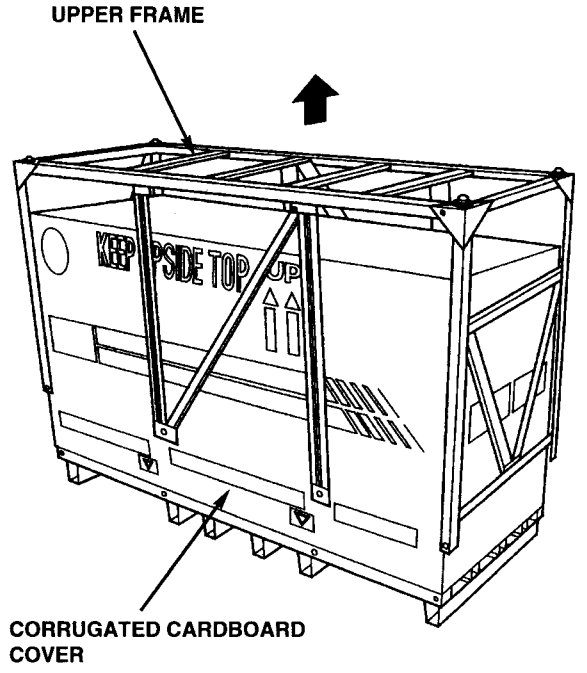
1. Remove the engine hanger bracket that secrues the engine hanger.



2. Remove the eight bolts attaching the upper frame to the crate base.

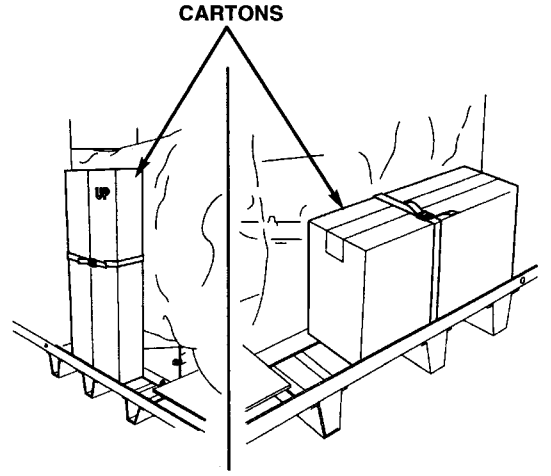


3. Slowly lift the upper frame being careful to not strike the outboard motor. Get an assistant to help remove the crate frame. Then remove the corugrated cardboard cover.

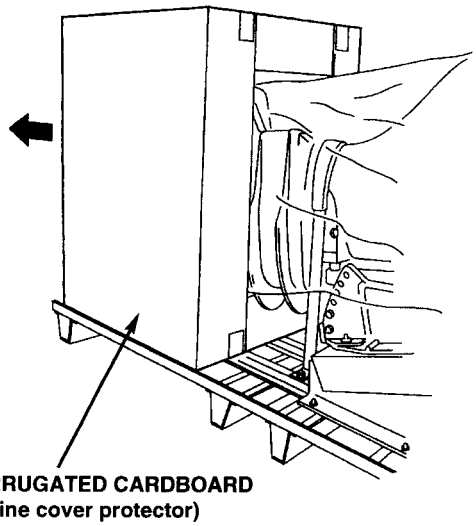


4. Cut the ties and remove the parts cartons from the crate.

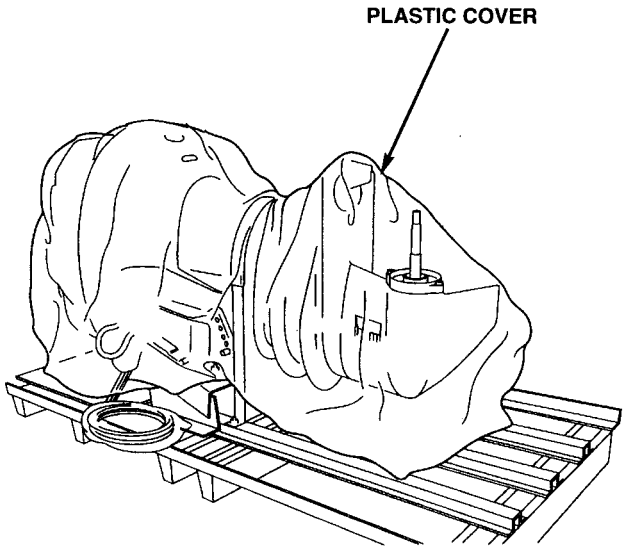
   Check parts against parts list on page 7.



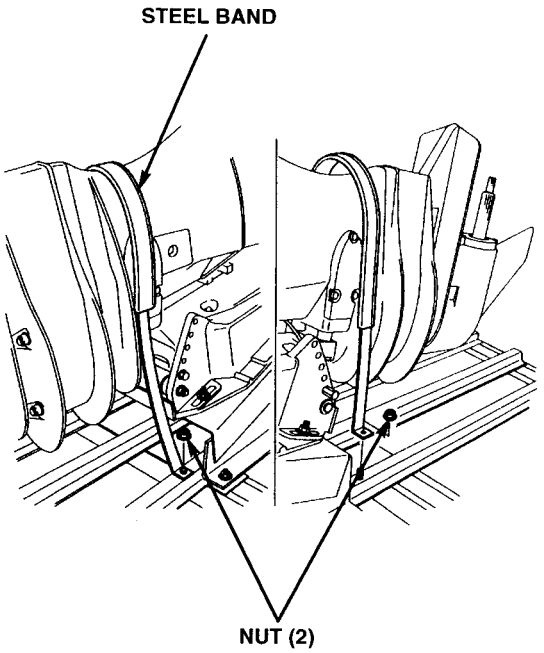
5. Slide off the corrugated cardboard engine cover protector.



6. Remove the plastic cover from the outboard motor.



7. Remove the two nuts and remove the steel band from the outboard motor.

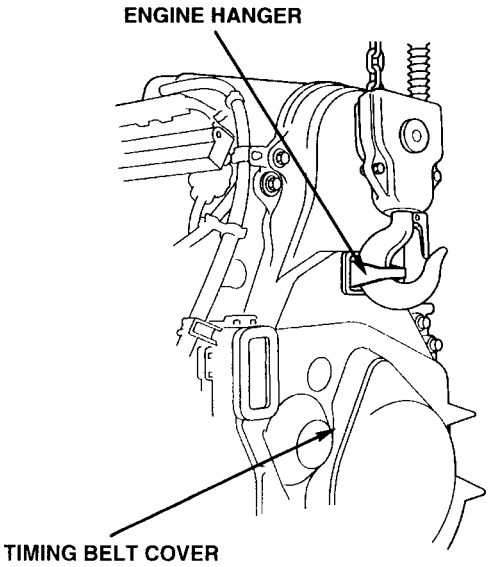


8. Connect a hoist to the engine hanger. Carefully lift the outboard motor with the lower crate frame attached.

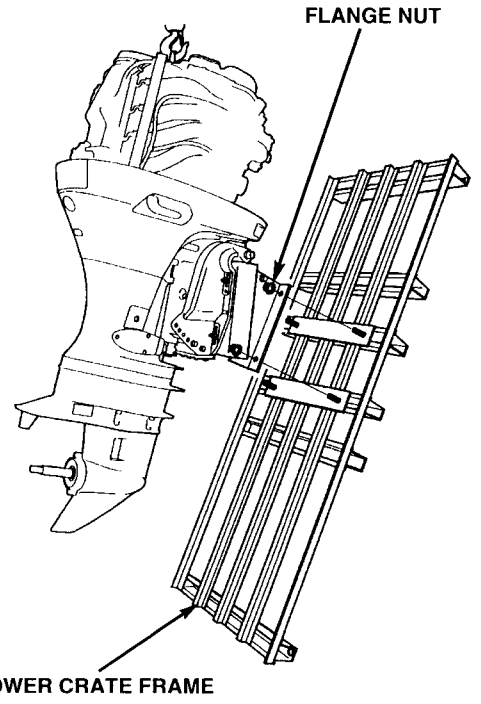
   Use a suitable hoist with a capacity rating of 550 lb (250 kg) or more.

   Lift up the outboard motor while supporting it and take care not to let the outboard motor swing.

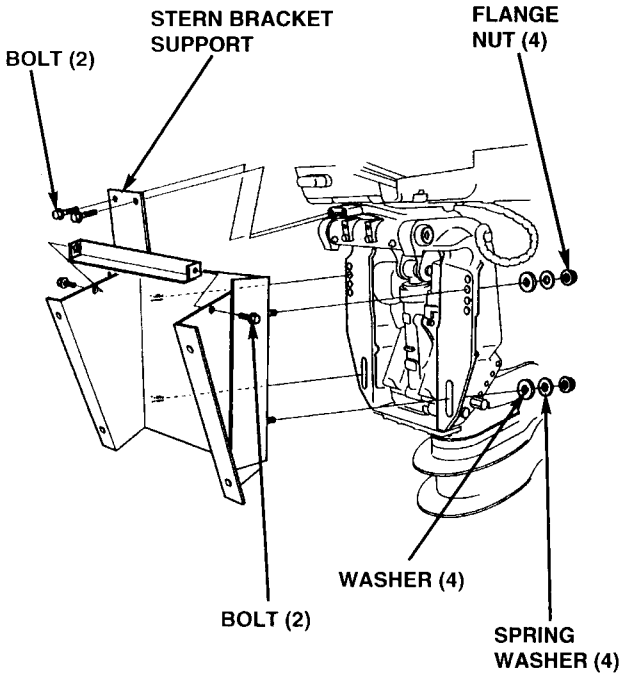
   Take care not do damage the timing belt cover while lifting the outboard motor.



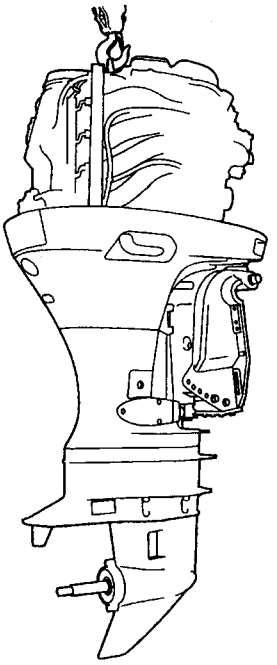
9. With the lower crate frame end resting on the floor, remove the lower crate frame from the outboard motor by removing the four flange nuts.



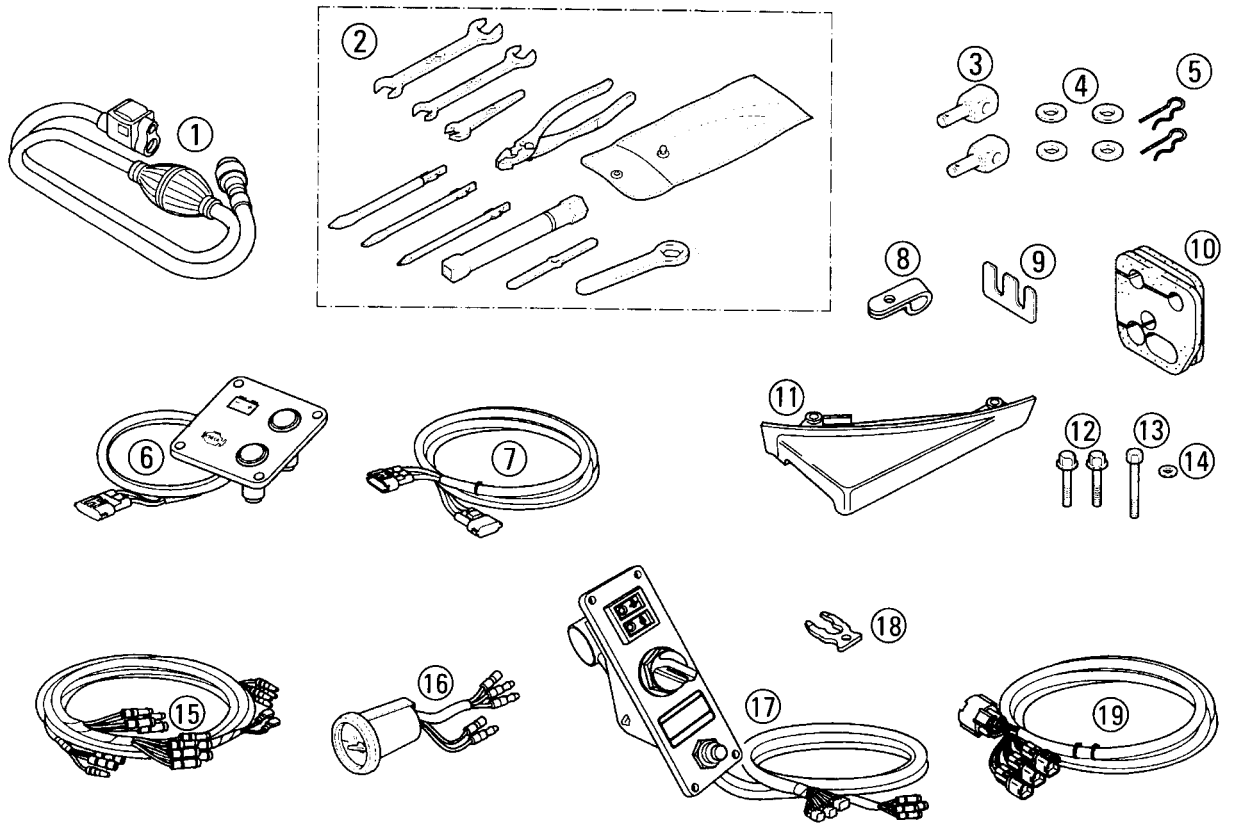
10. Remove the four bolts, washers, spring washers and flange nuts, and remove the stern bracket support.



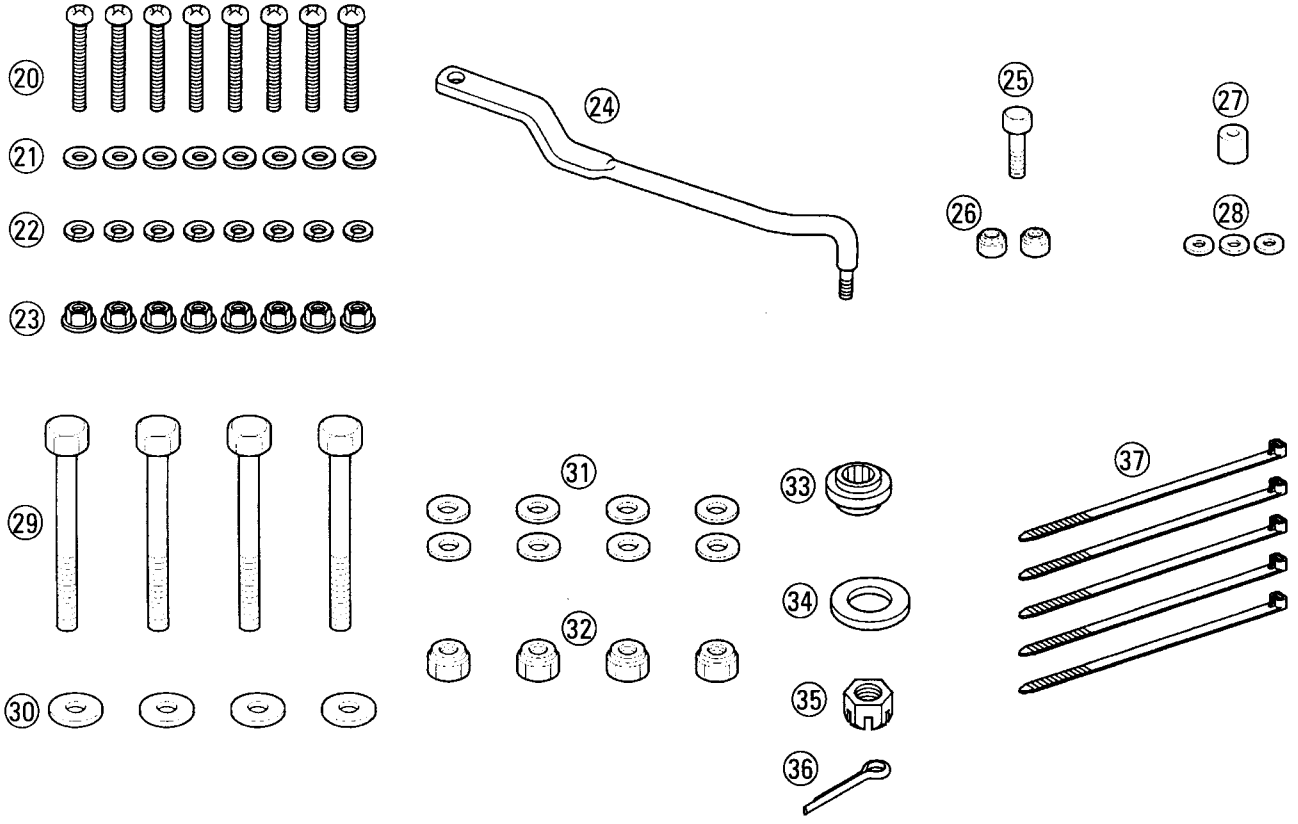
11. The outboard motor should be placed on a stand until boat transom is completely prepared.



PARTS PACKAGE INSPECTION



Ref. No.	Part Description	BF115A				BF130A				Part Number	Honda Code	Remarks
		LA	XA	XCA	LCA	LA	XA	XCA	LCA			
1	Fuel tube assembly	1	1	1	1	1	1	1	1	17700-ZV5-010	4729000	
2	Tool kit	1	1	1	1	1	1	1	1	89000-ZW5-000	5893474	
3	Pivot shaft	2	2	2	2	2	2	2	2	24618-ZV5-000	3702982	
4	6 mm plain washer	4	4	4	4	4	4	4	4	90504-921-010	0285114	Use with Ref. No. 3
5	6 mm special lock pin	2	2	2	2	2	2	2	2	90765-ZW1-000	5164215	
6	Indicator panel	1	1	1	1	1	1	1	1	37206-ZW5-004	5892369	
	Indicator lamp assembly	1	1	1	1	1	1	1	1	37210-ZW5-004	5892377	
7	Indicator wire harness	1	1	1	1	1	1	1	1	32185-ZW5-000	5892187	16.4 feet long
8	Cable clamp F	1	1	1	1	1	1	1	1	90267-ZA8-E50	2322139	Use with Ref. No. 6
9	Control cable plate	1	1	1	1	1	1	1	1	17877-ZW1-000	4898037	
10	Grommet	1	1	1	1	1	1	1	1	40105-ZW5-000	5892476	
11	Separate cover	1	1	1	1	1	1	1	1	40151-ZW5-000ZA	5892484	
12	6 x 30 mm flange bolt	2	2	2	2	2	2	2	2	95701-06030-02	2801348	Use with Ref. No. 11
13	6 x 40 mm bolt	1	1	1	1	1	1	1	1	90120-ZV4-000	2800381	
14	6 mm plain washer	1	1	1	1	1	1	1	1	90506-ZV4-000	2800605	
15	Meter harness A	1	1	1	1	1	1	1	1	32540-ZV5-910	3703873	
16	Trim meter assembly	1	1	1	1	1	1	1	1	37260-ZV5-821	3704236	
17	Switch panel assembly	1	1	1	1	1	1	1	1	32340-ZW5-003	5892203	
18	Emer. stop sw. clip (spare)	1	1	1	1	1	1	1	1	36187-ZV4-651	3749231	Store in tool bag
19	Switch panel wire harness	1	1	1	1	1	1	1	1	32580-ZW1-V01	5868419	16.5 feet long



Ref. No.	Part Description	BF115A				BF130A				Part Number	Honda Code	Remarks
		LA	XA	XCA	LCA	LA	XA	XCA	LCA			
20	5 x 40 mm pan-head screw	8	8	8	8	8	8	8	8	93500-05040-1B	4901393	Use with Ref. No. 6, 17
21	5 mm plain washer	8	8	8	8	8	8	8	8	94103-05200	1494962	
22	5 mm spring washer	8	8	8	8	8	8	8	8	94111-05400	4901427	
23	5 mm flange nut	8	8	8	8	8	8	8	8	94050-05020	4901419	
24	Steering link arm	1	1	1	1	1	1	1	1	53238-ZW1-000	4900213	
25	3/8-24 UNF bolt	1	1	1	1	1	1	1	1	90105-ZW1-000	4900775	Use with Ref. No. 24
26	3/8-24 UNF nut	2	2	2	2	2	2	2	2	90307-ZV5-003	3706066	
27	Steering rod collar	1	1	1	1	1	1	1	1	91560-ZV5-000	3706892	
28	10 mm washer	3	3	3	3	3	3	3	3	90514-ZV4-000	2800647	
29	12 x 119 mm hex bolt	4	4	4	4	4	4	4	4	90129-ZW1-000	4900866	Outboard motor installation
30	12 mm fender washer	4	4	4	4	4	4	4	4	90552-ZV5-000	3706447	
31	12 mm plain washer	8	8	8	8	8	8	8	8	90559-ZV5-000	3706470	
32	12 mm self-locking nut	4	4	4	4	4	4	4	4	90308-ZW1-003	4901047	
33	Propeller thrust washer	1	1	1	1	1	1	1	1	90506-ZW1-B00	5743869	
34	18 mm plain washer	1	1	1	1	1	1	1	1	90508-ZW1-B00	5743877	
35	18 mm castle nut	1	1	1	1	1	1	1	1	90301-ZW1-B00	5743851	
36	4.0 mm cotter pin	1	1	1	1	1	1	1	1	90758-ZW1-B00	5743885	
37	Cable tie	5	5	5	5	5	5	5	5	32901-952-770	0743963	

MOTOR INSTALLATION

Motor Selection

Secure and correct installation is essential for safe boating and good perfomance. Follow the installation instructions provided in this manual.

⚠ WARNING

Improper set-up or pre-delivery service can cause an unsafe condition that can cause your customer to be seriously hurt or killed.

Follow the procedures and precautions in this manual and the shop manual carefully.

Before installation, check to be sure that the outboard motor does not exceed the recommended maximum horsepower for the boat on which it is to be installed. Refer to the boat's certification plate for recommended maximum horsepower. For most applications, the outboard motor should provide 80% of the recommended maximum horsepower for the boat. If the certification plate information is not available, contact the boat dealer or manufacturer.

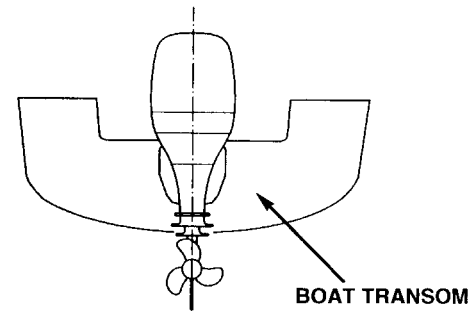
Refer to the dimensional drawings on page 3 to be sure there is nothing on the boat that will interfere with outboard motor tiltup and steering.

The BF115A and BF130A outboard motors are designed to be installed on a boat transom with the following transom board thickness.

Boat Transom Board Thickness
2 ~ 2-3/4 inch (50 ~ 70 mm)

General Guidelines

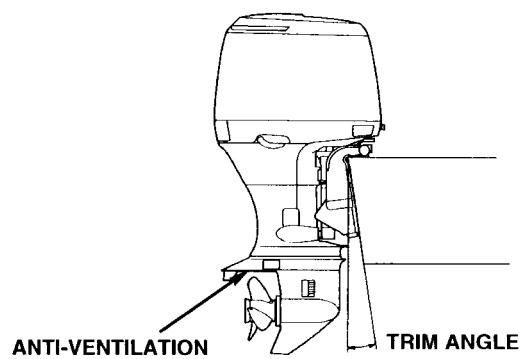
Install the outboard on the center of the transom securely and be sure that the boat is well-balanced.



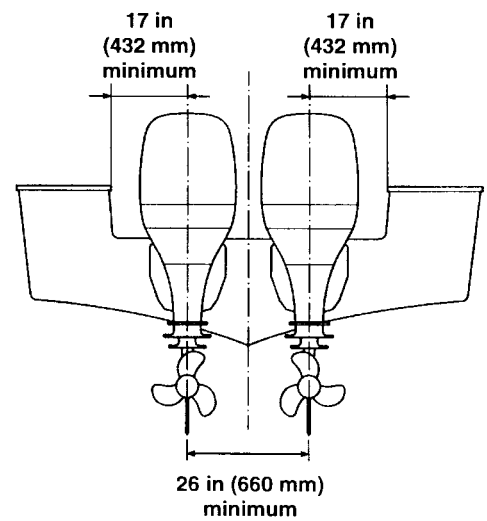
As a general rule, the outboard should be installed so the anti-ventilation plate is parallel to the boat bottom.

If the boat transom angle is less than 8°, the BF115A or BF130A anti-ventilation plate will not be parallel to the boat bottom when trimmed to the lowest hole.

Refer to your boat specifications for details.



Dual outboards must be installed so that the outboard center-to-center distance is a minimum of 26 inches (660 mm). The transom board should still have a minimum extra space of 17 inches (432 mm).
The right and left outboards must be well-balanced.

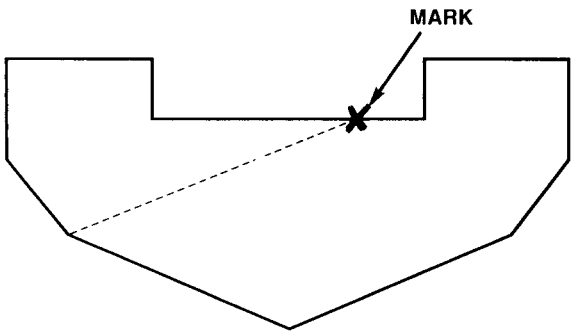


Boat Transom Center Line

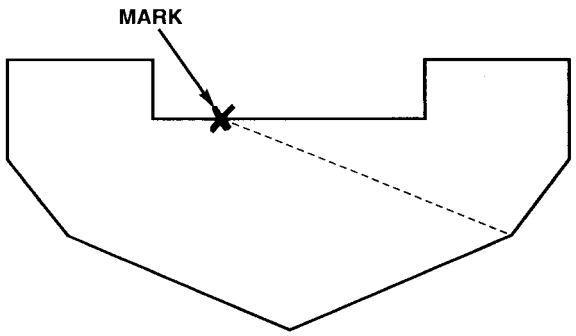
Measure across the transom to determine the transom center line and draw a vertical line. On a "V" bottom boat, the vertical line should pass through the keel.

Use a pencil and tape measure to locate center line.

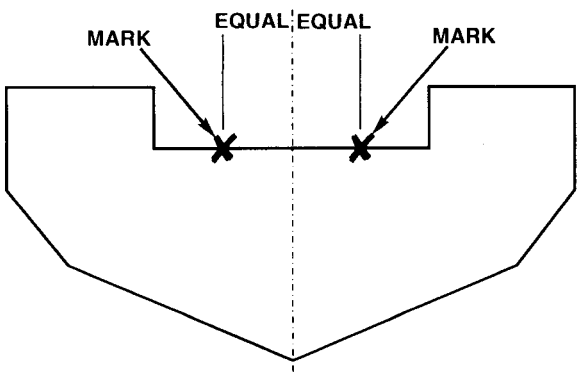
1. Put one end of the tape measure on a chine and place the other end on the upper edge of the transom, somewhere past the "visual" center. Place a mark on the transom and record the distance measured.



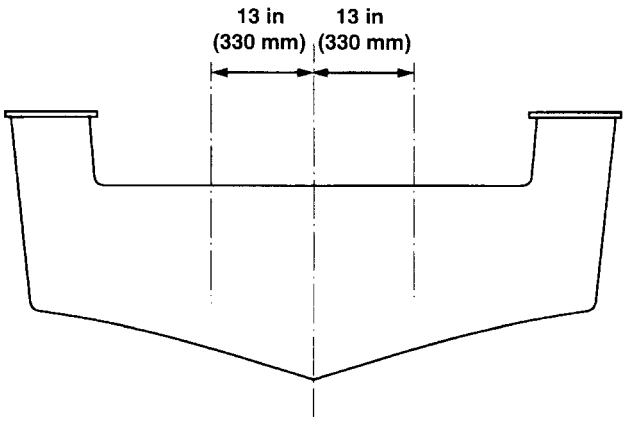
2. Measure the same distance from the opposite chine and make a mark.



3. Measure the distance between the two marks and place a third mark halfway between them. The line connecting the third mark with the keel is the center line.



If dual outboards are to be installed, mark transom at a minimum of 13 inches (330 mm) from center line.



Installation Height Check

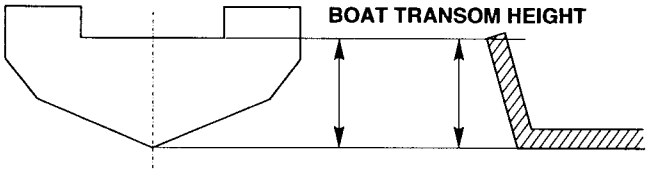
Optimum outboard motor installation height varies with boat type and bottom shape. Normal installation height recommendations are shown on page 12. Contact the boat manufacturer for any special recommendations that are unique to a specific model of boat.

If the outboard motor is installed to low:
– The boat will squat and be hard to plane.
– The boat high-speed stability will be reduced.
– The boat will tend to porpoise.

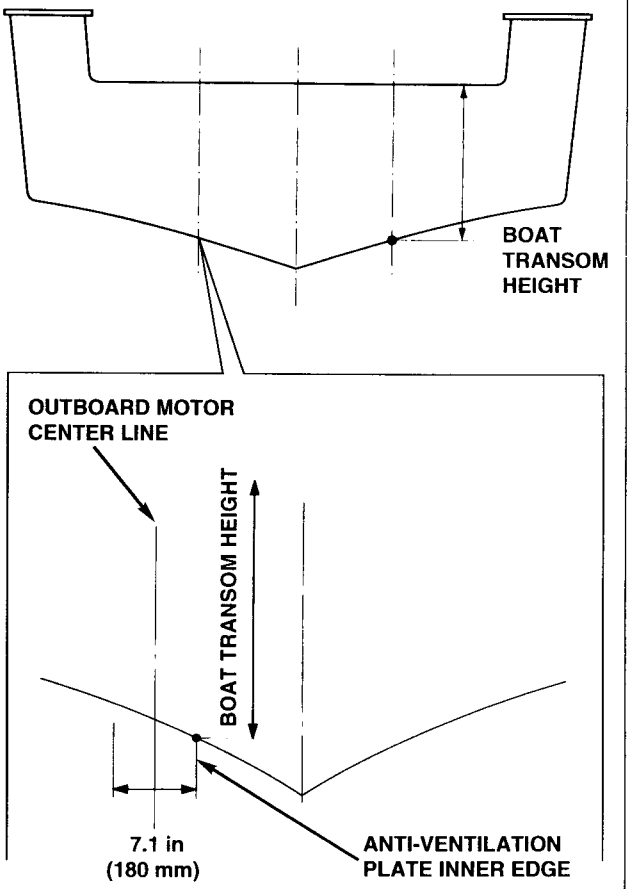
If the outboard motor is installed too high:
– Ventilation may occur.

1. Measure the boat transom height.

SINGLE OUTBOARD



DUAL OUTBOARDS

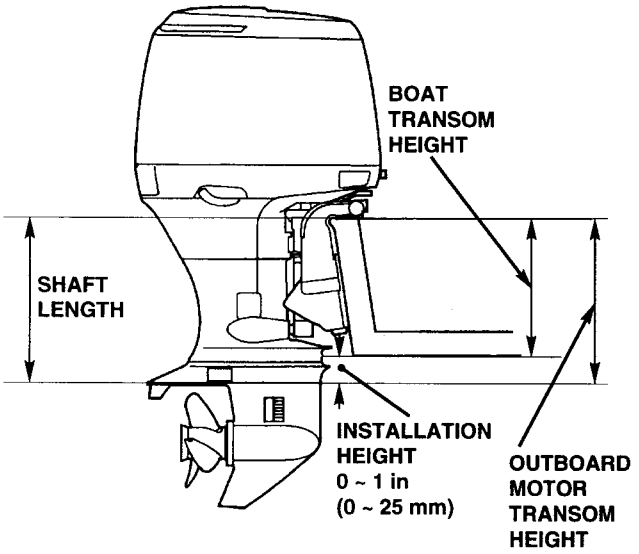


On "V" bottom boats, measure the transom height. It should be the distance from the top edge of the boat transom to the point at which the vertical line passing the inner edge of the anti-ventilation plate intersects with the boat bottom.

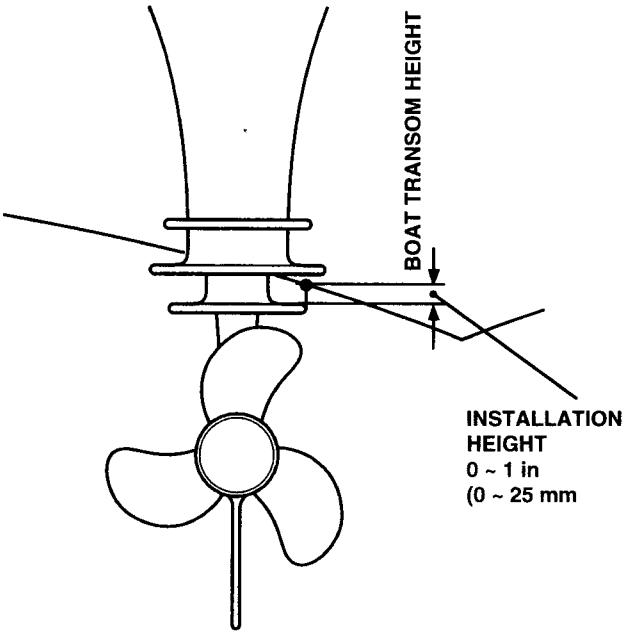
2. Calculate the outboard shaft length requirement. Match the appropiate outboard shaft length to your boat transom height.

Shaft Length	Outboard Transom Height	Workable Boat Transom Height
Long	21-1/8 in (537 mm)	20-3/16 ~ 21-1/8 in (512 ~ 537 mm)
Extra long	26-1/8 in (664 mm)	25-1/8 ~ 26-1/8 in (639 ~ 664 mm)

To determine outboard shaft length requirements, subtract the boat transom height from the motor transom height. The difference should be approximately 0 ~ 1 in (0 ~ 25 mm) which is the installation height range.



When mounting dual engines on "V" bottom boats, the outboard installation height range is 0 ~ 1 in (0 ~ 25 mm).



3. If the outboard installation height cannot be achieved, adjust boat transom height.

Boat Transom Height Adjustment

If the transom is too low or too high, or needs to be modified to accommodate the width of the outboard motor(s), contact the boat's manufacturer and follow their recommendations for corrective action.

If mounting two outboard motors, be sure the installation height is identical for both.

Some boat manufacturer's may require different mounting heights. Consult your boat manufacturer for specifics on your boat.

Transom Drilling

Verify that no damage will occur when the motor mounting holes are drilled. Look for any structural impediments such as bulkheads, braces, fuel cells, bilge pumps, or floor sections before drilling.

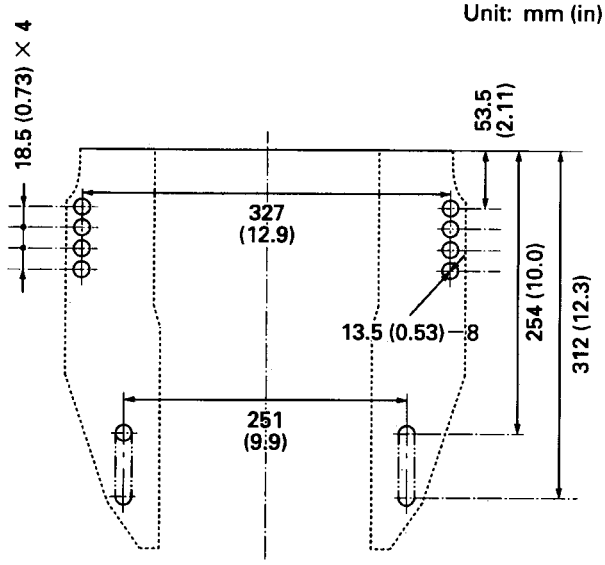
Ensure that there is adequate space for the bolt and washer to bear on a flat surface.

Use the TRANSOM MOUNT DRILL FIXTURE (special tool P/N 07MPZ-ZV3010B) as a drill guide.

Wear safety glasses and drill four 1/2-inch holes in the transom. The upper holes must be at least 1 inch (25 mm) below the transom top edge. This distance will be achieved when the TRANSOM MOUNT DRILL FIXTURE is positioned on the transom top edge.

Use a vacuum cleaner to clean up after drilling.

Unit: mm (in)

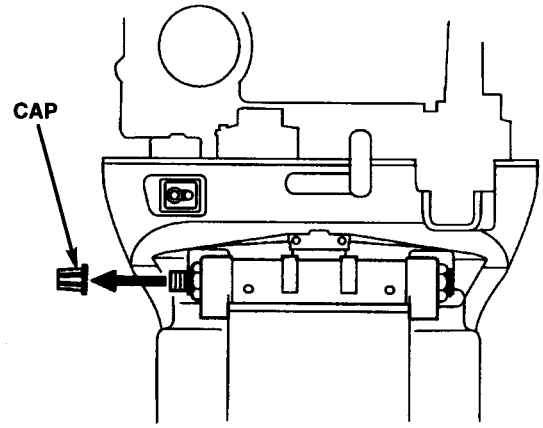


Steering Cable Installation

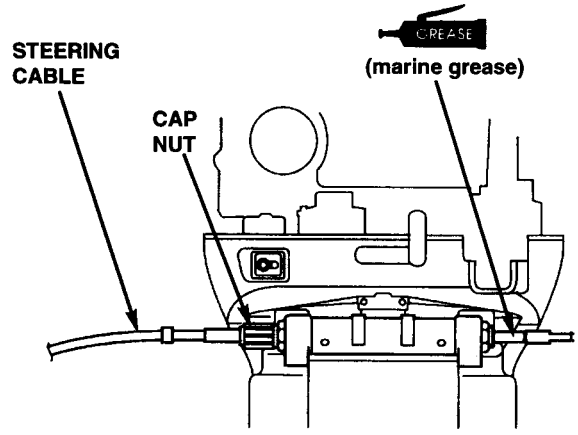
Do this before final placement of the motor on the transom.

Refer to the steering cable manufacturer's manual for cable handling procedures.

1. Remove the cap from the steering/tilt tube.



2. Fully extend the steering cable. Apply waterproof marine grease to the inner and outer cable ends. Do not use wheel bearing grease. Install the steering cable through the steering/tilt tube. When steering cable enters from the port side, the steering/tilt tube must be reversed. Refer to the shop manual or call Honda Tech Line for proceedures.
3. Hand-tighten steering cable cap nut at this time.

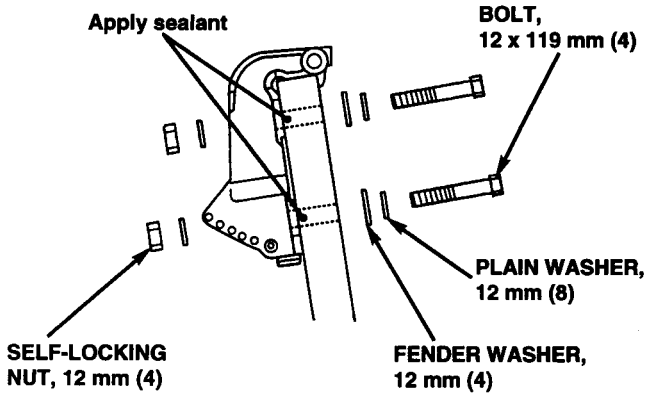


4. Lower motor on transom and align mounting holes.

Bolting Motor to Transom

With motor resting on the boat transom, verify correct motor height. Motor can be raised by using a lower set of mounting holes. Apply silicone sealant or equivalent to the outside of the mounting bolt holes. Secure motor by installing bolts from the boat side. Tighten the self-locking nuts. The bolts must have sufficient thread length to tighten down and have at least two or three threads past the end of the self-locking nut.

TORQUE: Mounting bolt: 40 ft-lb (54 N·m)



Steering Link Arm Installation

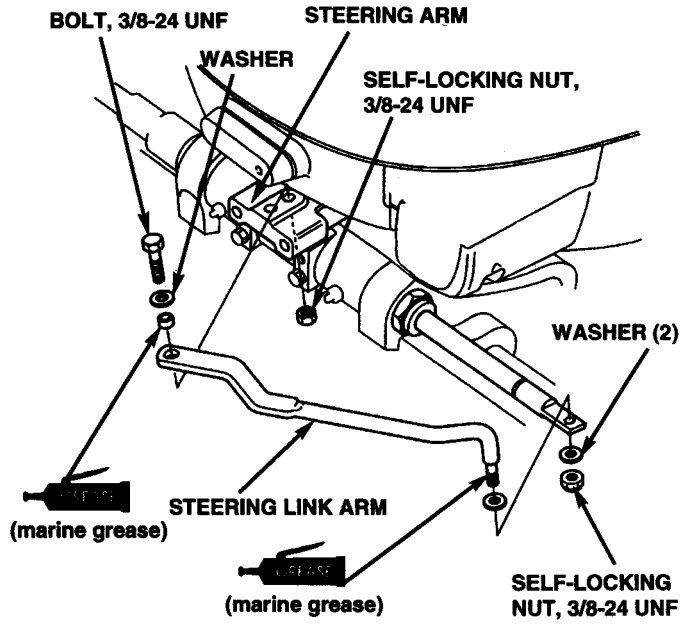
The steering link arm must be secured between the steering arm and steering cable using the bolt, washers, nuts, and collar shown below. Both the bolt and self-locking nuts, used at each end of the steering link arm, must be in good condition. Install and tighten hardware as follows:

1. Install bolt, washer, and collar into link arm. Remove access grommet from inside engine cover area and thread bolt into steering arm inside hole. Tighten bolt then tighten lock nut. Do not use forward hole.

   TORQUE:

3/8-24 UNF bolt:	16 ft-lb (22 N·m)
3/8-24 UNF lock nut:	13 ft-lb (18 N·m)

2. Turn steering wheel to extend the steering cable out of the steering/tilt tube. Install steering link arm into steering cable end. Use hardware shown below and connect link arm to the steering cable.
3. Turn steering wheel to retract steering cable into the steering/tilt tube. Tighten steering link arm to steering cable self-locking nut to a torque of 7~8 ft-lb (8~11 N·m) then loosen self-locking nut 1/8 turn.



4. Tighten steering cable nut until the steering cable end play is removed.

   TORQUE:
   Steering cable nut: 25 ~ 36 ft-lb (34 ~ 49 N·m)

   After steering cable nut is torqued, there should be no end play between outer steering cable and steering/tilt tube.

   For further information regarding steering cable, refer to boat manufacturer's operation manual.

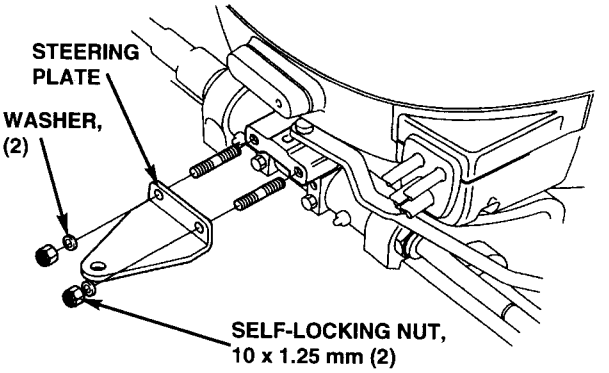
5. Directly after completing the steering link arm and steering cable installation, verify the following:
   - Motor turns the proper direction when the steering wheel is turned right and left. If the steering is reversed, correct at the steering box.
   - Motor steering angle is equal when steering wheel is turned full right and full left. If the motor steering angles are not equal:
     - Major corrections can be made at the steering box (refer to the steering box or steering cable manufacturer's instructions).
     - Minor corrections can be made by moving the steering/tilt tube laterally (refer to the Shop Manual).

   Make the steering angles equal as necessary.
   - The steering cable and/or steering link arm must not come in contact with any part of the boat when the steering wheel is turned full right and full left and at all tilt angles. Correct as necessary and check again.

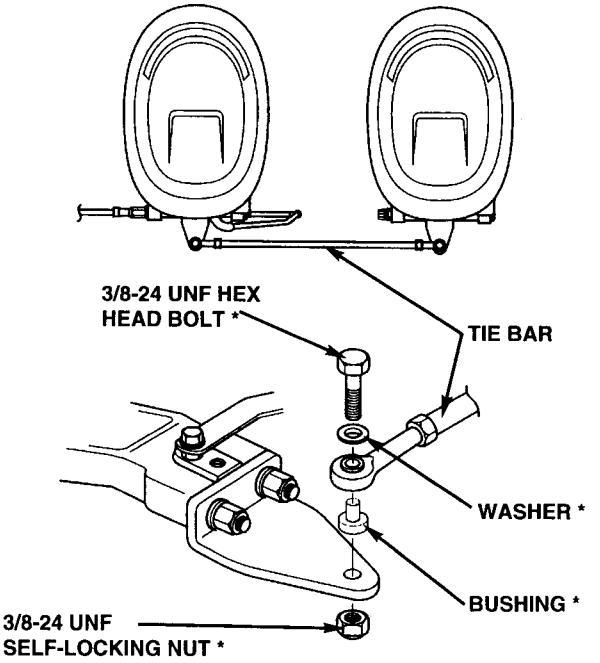
Tie Bar Installation (dual motors)

1. As previously described, install steering cable and steering link arm.
2. Install a steering plate on each motor.

   TORQUE:
   Self-locking nut, 10 x 1.25 mm: 25 ft-lb (34 N•m)



3. Install a Honda or a commercially available tie bar in the steering plate hole.



Part Description	Part Number
Tie Bar	50850-ZV5-000AH
Steering plate (2 required)	53234-ZW1-000
Self-locking nut, 10 mm (4 requied)	90306-ZV5-003
Stud, 10 x 28 mm (4 required)	90109-ZV5-000
Washer, 10 mm (4 required)	90514-ZV4-000

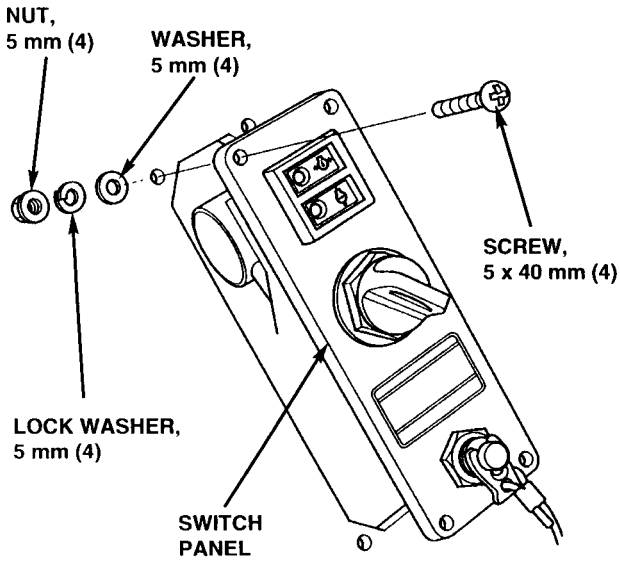
* Included with tie bar.

Panel Installation

When a side flush-mount or top mount remote control is used, locate the switch panel and indicator panel near the operator, in a position where it will not obstruct the operation of the boat.

Switch Panel Installation

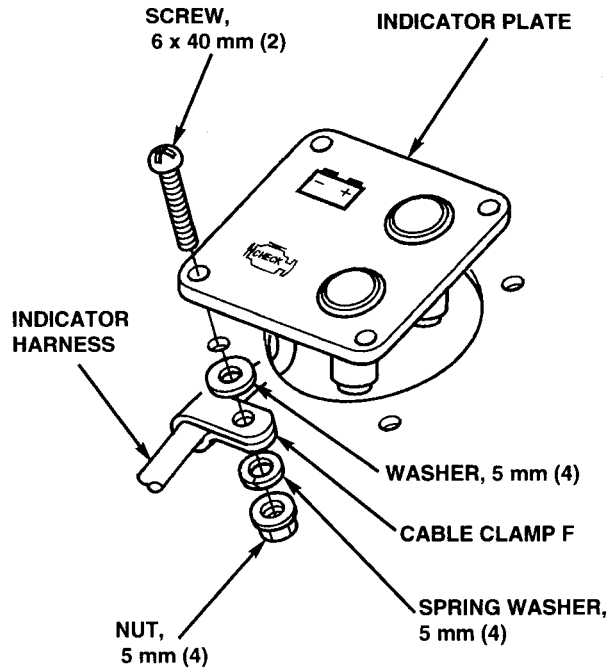
1. Attach the template enclosed with this manual to the switch panel installation surface.
2. Wear eye protection, then drill and cut as indicated on the template.
3. Connect the wire harness to the remote control wire harness and the trim/tilt switch harness.
4. Install the switch panel on the installation surface using the four 5 x 40 mm screws and four 5 mm washers, lock washers, and flange nuts.



Indicator Panel Installation

1. Attach the template enclosed with this manual to the indicator panel installation surface.
2. Wear eye protection, then drill and cut as indicated on the template.
3. Route the wire harness through the hole in the panel.
4. Install the indicator panel on the installation surface using the four 5 x 40 mm screws and four 5 mm washers, lock washers, and flange nuts.

   Clamp the indicator panel wire harness using the cable clamp F to prevent wire harness vibration damage.



Panel Location Wire Connections

Route switch panel and indicator panel wire harnesses. Connect wire harnesses properly, as shown in the wiring diagram below.

Securely connect wire harness end connectors. If a terminal is oxidized or corroded, remove the oxidation or corrosion with a nonconductive plastic scrub pad or contact cleaner before reconnecting it.

If the wire harnesses are too short, the following optional harness extensions are available.

Description	Part Number	Length
Switch panel	32581-ZW1-V00†	30 feet
	32570-ZW1-900	7 feet
Indicator panel*	08M66-ZW7-220S†	30 feet
	08M66-ZW7-210S	7 feet

† Harness has heavier gauge wire to compensate for voltage drop caused by longer wire length.

* Due to availability, it may be necessary to connect standard indicator panel harnesses as necessary.

Switch Panel Maximum Combination Lengths

- One or two 7 ft cable harness extensions + one standard 16.5 ft cable harness = max. length 30 ft.
- One 30 ft cable harness + one or two 7 ft cable harness extensions = max. length 44 ft.

If you exceed the maximum lengths shown above, electrical devices and accessories may malfunction due to reduced current.

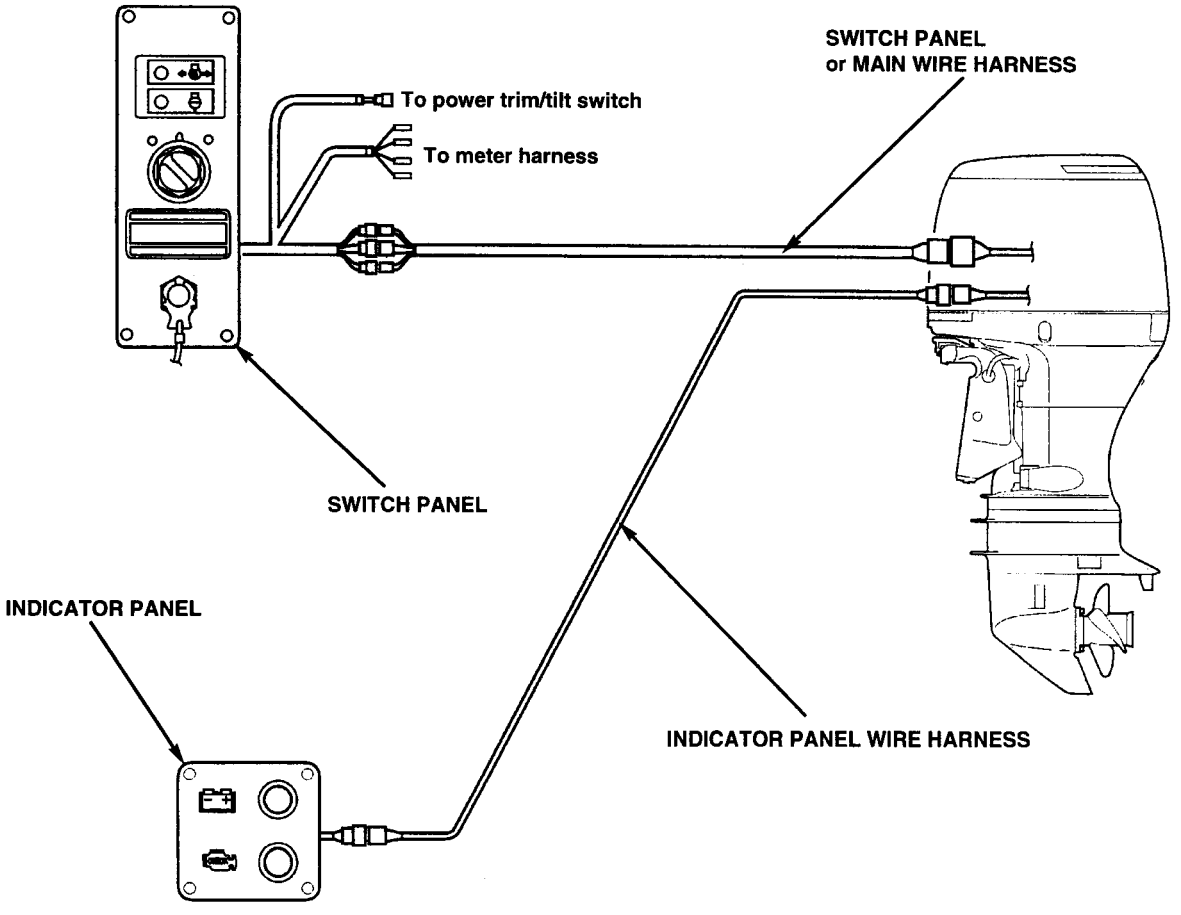
Indicator Panel

Do not break the wire harness coverings. If the covering of a wire is broken, either repair it with electrician's tape, or replace it.

After each wire and harness is connected, check for proper connections by referring to the wiring diagram.

Side Surface-Mount Control

If a side surface-mount control is used, the remote control harness length is 16.5 feet. If this is not long enough, the optional 7 foot cable harness extension P/N 32570-ZW1-900 can be used.

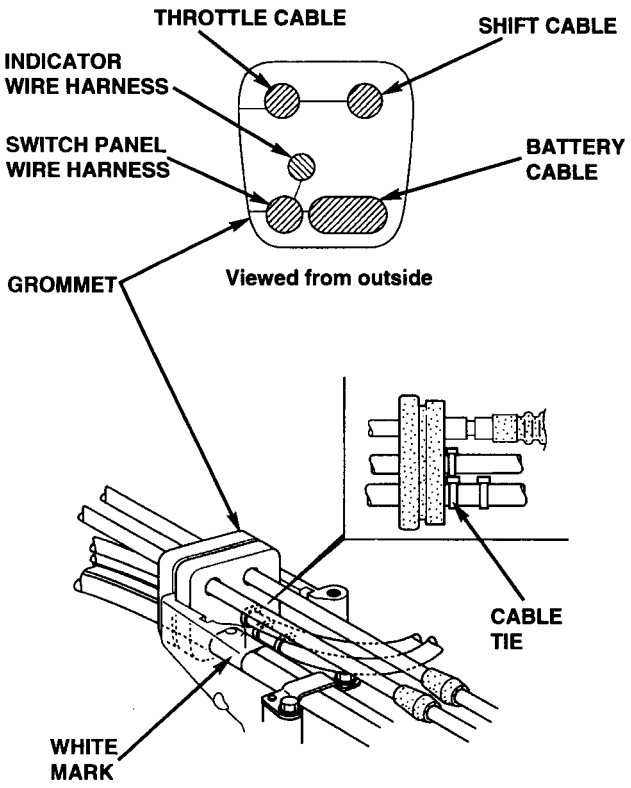


Cable/Electrical Connections (motor side)

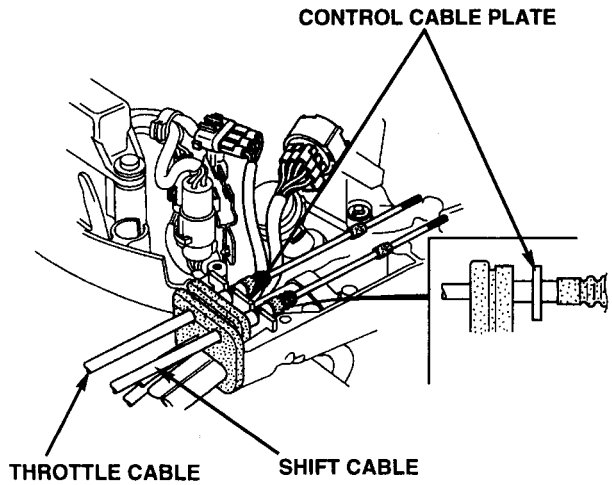
Route and connect cables to remote control before connecting them to the motor.

1. Pass the switch panel wire harness, indicator wire harness, battery cable and the control cables through the grommet.
2. Make sure that the white mark on the battery cable aligns with the inside edge of the grommet.

   Position the cable tie on the switch panel wire harness and the indicator wire harness at the inside of the grommet.

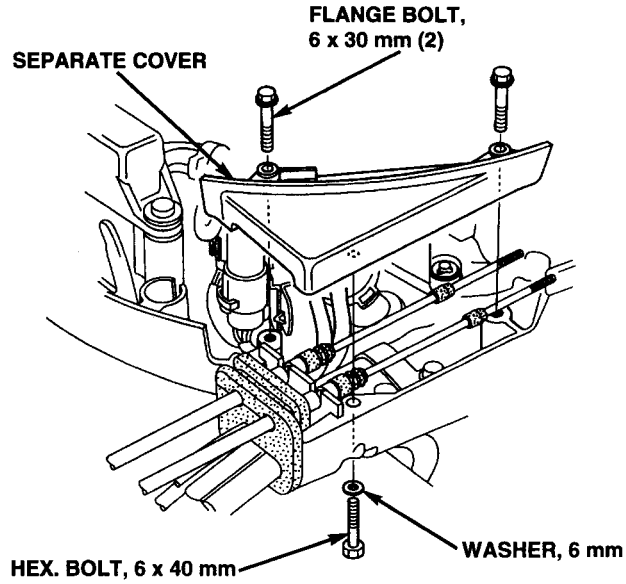


3. Install the remote control cable plate by aligning groove in control cables and groove in undercase.

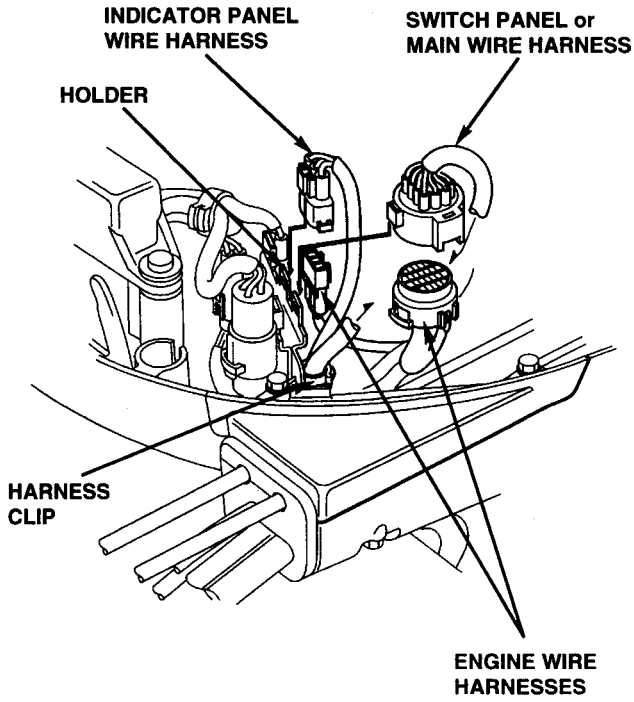


4. Install separate cover and tighten bolts securely.

   TORQUE:
   Flange bolt, 6 x 30 mm: 9 ft-lb (12 N•m)
   Hex. bolt, 6 x 40 mm: 7 ft-lb (10 N•m)

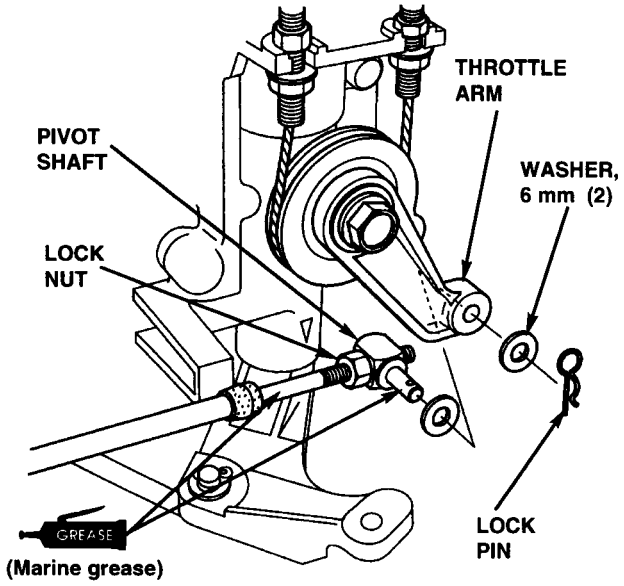


5. Connect the indicator panel wire harness and switch panel or main wire harness to the engine wire harnesses. Attach the harness connectors to the holder and secure wire harnesses to harness clip.

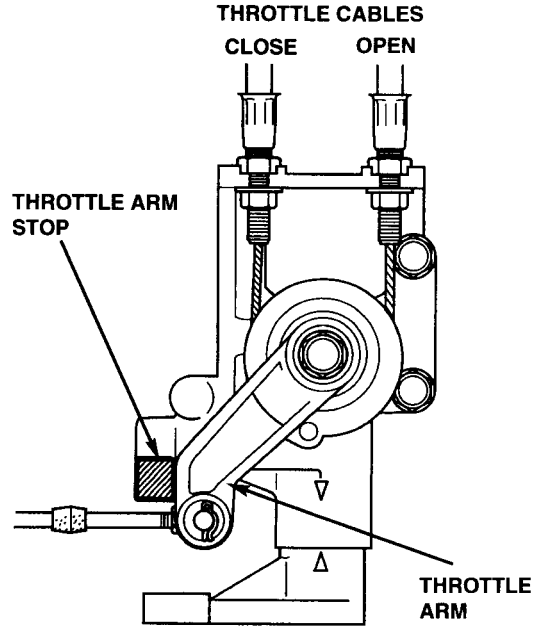


Throttle Cable Connection

1. Put the remote control lever in the neutral position.
2. Thread the pivot shaft onto the threaded portion of the throttle cable. Apply marine grease to the pivot pin.
3. Adjust the pivot shaft until it will insert into the throttle arm. Install the pivot shaft from the engine side. Install washers on both sides of the arm and secure with a lock pin.



4. Move the remote control lever to the full throttle position. Make sure the throttle arm contacts the throttle arm stopper. If the throttle arm does not contract throttle arm stop, check for full stroke at the remote control.



If a Honda Premium Remote Control is installed the following optional spacers are available to gain additional remote control lever travel.

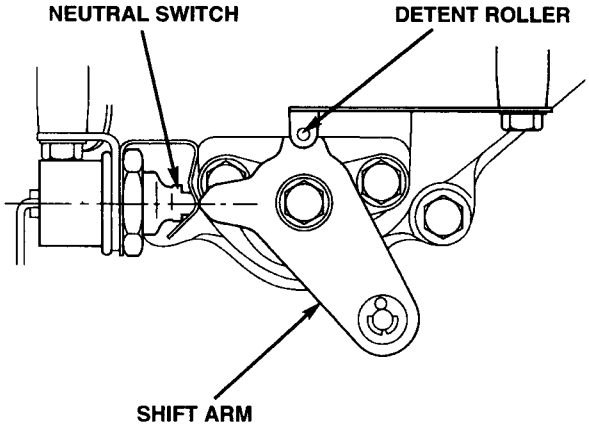
Part Description	Part Number
Spacer, single top mount	08M61-ZW5-AA0S
Spacer, dual top mount	08M61-ZW5-AB0S

The installation height of the remote control will increase 1 inch (25 mm) with spacer installed.

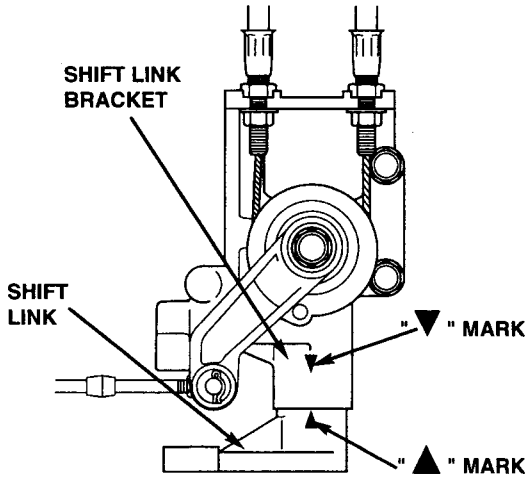
Avoid changing the open or close throttle cable adjustment. These cables normally do not require adjustment during pre-delivery service. If these cables are changed unnecessarily, full throttle and/or idle speed may be adversely affected. If you cannot achieve full throttle or proper idle speed, always check control cable adjustment first before changing the open or close throttle cable adjustment or idle rpm.

Shift Cable Connection

1. Centering remote control lever:
   a. Move remote control lever to full forward position
   b. Slowly return control lever to neutral position
   c. Move control lever to full reverse position
   d. Slowly return control lever to neutral position
2. With the outboard motor in the neutral position, make sure the shift arm tip aligns with the neutral switch tip and the detent roller is in the shift arm groove.



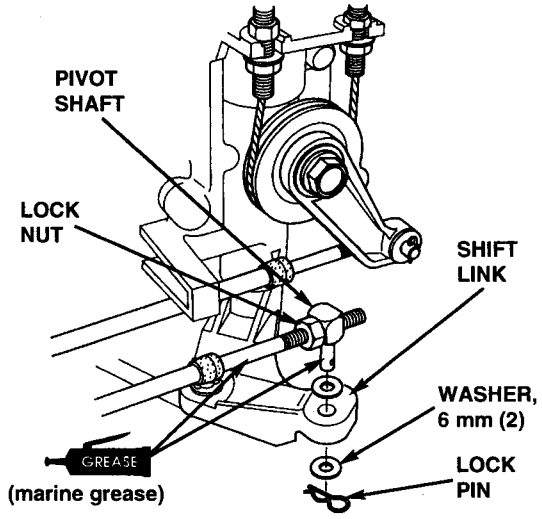
The " ▼ " mark on the shift link bracket will be aligned with the " ▲ " mark on the shift link.



3. Thread the pivot shaft onto the threaded portion of the shift cable.
4. Apply marine grease to the pivot pin.
5. Adjust the pivot shaft until it will insert into the shift link.

   Make sure the the pivot shaft is centered in the shift link hole, adjust by turning the pivot shaft if necessary.

   Install washers on both sides of the arm and secure with the lock pin.



After attaching shift cable to shift link, check for smooth operation by moving remote control lever to foward and reverse positions. Make sure shift link moves smoothly and returns to the neutral detent position when the remote control lever is returned to neutral.

NOTICE

If it is hard to shift, turn propeller shaft. Shifting with force will damage shift mechanism.

If shift arm moves smoothly and neutral detent aligns, tighten cable lock nut.

6. Operate control lever to check for smooth, proper shift cable and throttle cable operation.

METER INSTALLATION

Meters should be installed on the mounting panel. If any other location is selected, it will be necessary to use a mounting plate with a thickness of 1/16 ~ 7/16 in (2 ~ 11 mm).

If mounting plate thickness exceeds 0.44 in (11 mm), the mounting bracket must be modified accordingly.

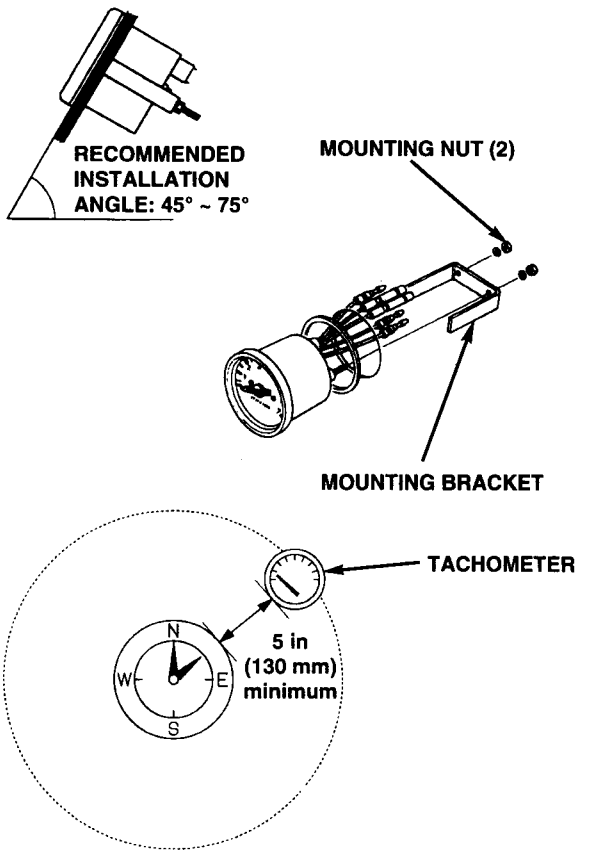
Tighten the mounting nuts evenly on both sides.

Meter installation angle should be within 45° to 75°.

If boat has a magnetic compass, install tachometer a minimum of 5 in (130 mm) away from the compass.

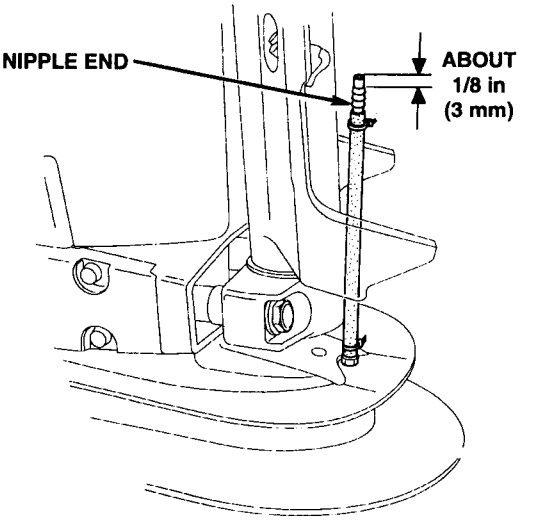
Meter	Part Number	Hole Saw Size
Tachometer*	37250-ZV5-950AH	3 3/8" (86 mm)
Trim Meter	37260-ZV5-821	2 1/8" (54 mm)
Speedmeter 10-65 mph	06372-ZV5-910	3 3/8" (86 mm)
Speedmeter 5-35 mph	06372-ZV5-950AH	3 3/8" (86 mm)
Hour Meter	39700-ZV5-912	2 1/8" (54 mm)
Hour Meter	39700-ZV5-800AH	2 1/16" (52 mm)
Voltmeter	37450-ZV5-911	2 1/8" (54 mm)

* Set selector switch to 4 pole alternator position.



Speedometer Tube Installation

Cut off about 1/8 in (3 mm) of the nipple end of the outboard motor sensor, then insert it into the speedometer tube. Attach securely with a cable tie.



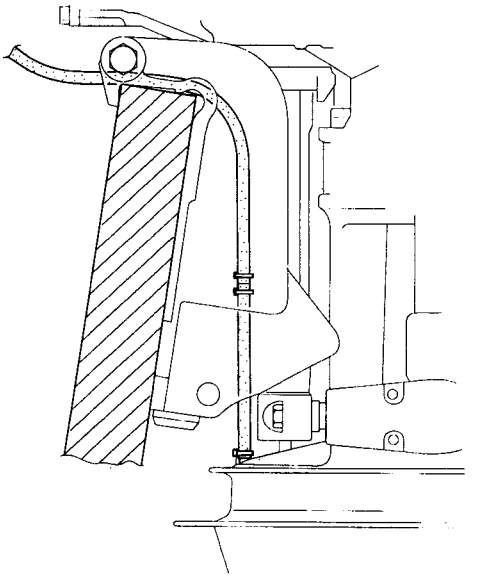
Route tube through stern bracket as shown below.

Secure tube to boat hull in such a way that the tube cannot be cut, bent or crushed. Then route the tube to the speedometer.

If sensor opening is plugged with salt or a foreign object, remove it with a piece of wire, etc.

When the boat is stored, remove the water in the sensor tube.

Before final tube attachment, make sure tube is not pulled too tight or crushed when motor is tilted UP or DOWN or turned full left or full right.



METER WIRE CONNECTIONS

Route and connect wire harness properly, as shown in the wiring diagram.

Use Meter Wire Harness A and B for meters.

Connect leads and terminals securely. Make sure terminals are waterproof.

Use 19-gauge (1.25 mm diameter) wires.

Connect the wire harnesses securely. If a terminal is oxidized or corroded, remove the oxidation or corrosion with a nonconductive plastic scrub pad or contact cleaner before reconnecting it.

Make sure all connections are water tight, use Honda Marine Terminal Service Kit A P/N 07VPZ-001000A.

Make sure insulators surround their connectors completely and the ends are not folded up.

Do not break the wire harness coverings. If the covering of a wire is broken, either repair it with electrician's tape, or replace it.

Attach unused terminals to the adjacent main harness with a piece of vinyl tape so that the terminals don't interfere with the surrounding parts.

Connect each wire properly, as shown in the wiring diagram.

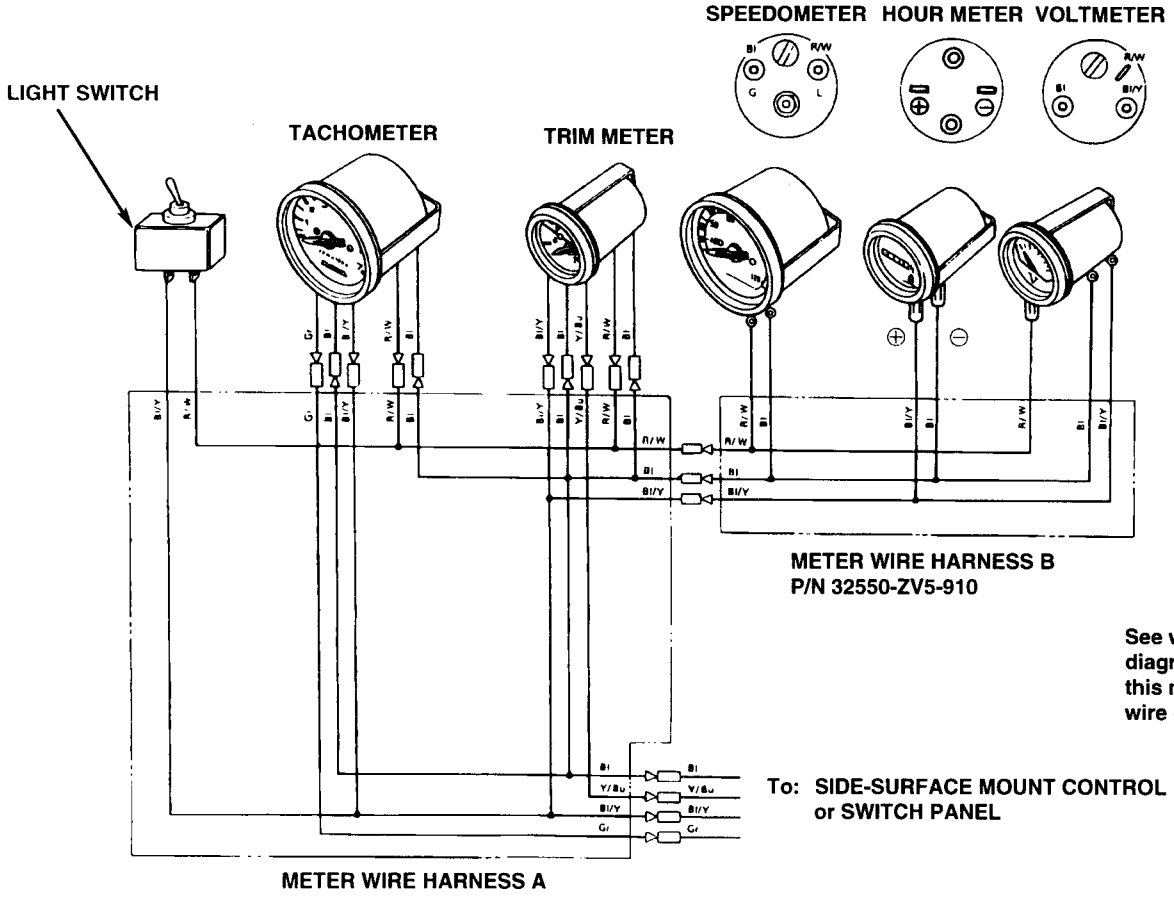
After each wire and harness is connected, check for proper connections by referring to the wiring diagram. Connect the battery and turn the main power on to check for proper operation.

Meter Wiring Diagram

This is an independent engine-control system. Do not attempt to integrate it with the boat's system or other accessories, except for the instrument light switch.

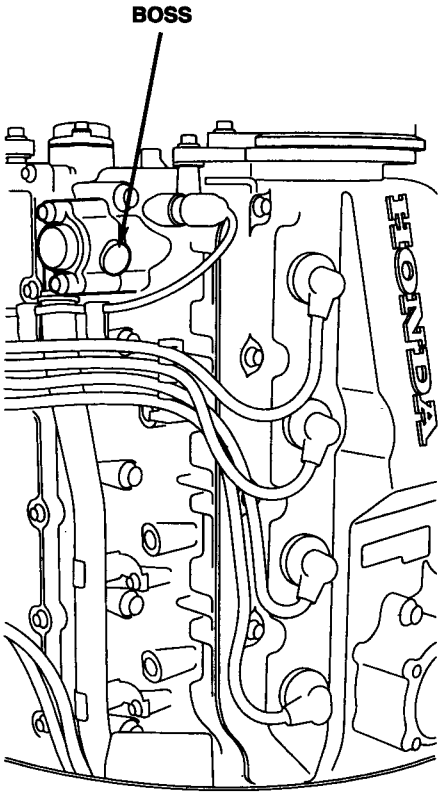
There are three ways to illuminate the instrument lights:

- Connect a commercially available switch (Teleflex 1A 16970 or equivalent) between the Bl/Y and R/W terminals.
- Connect 12V (+) from the boat's instrument lights to the R/W terminal.
- Connect the Bl/Y and R/W terminals together for "lights on" with the engine switch.



WATER PRESSURE GAUGE

A hole can be drilled and tapped on the flush valve spacer boss for installing a hose barb fitting.



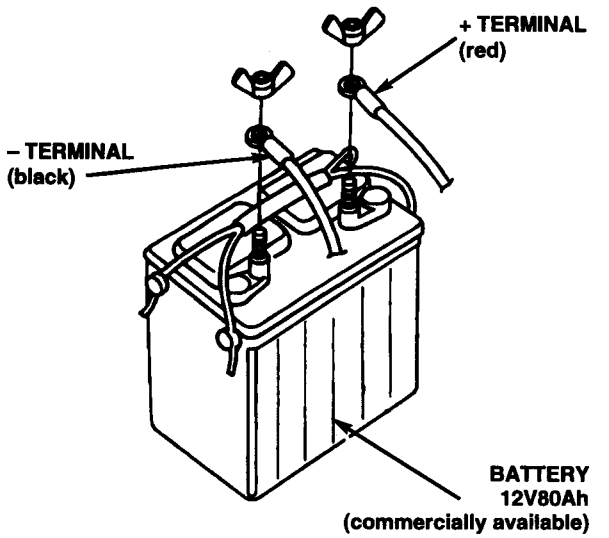
Follow shop manual instructions to remove spacer for drilling and tapping or call Honda Tech Line.

Use fittings recommended by pressure gauge manufacturer.

BATTERY (not included)

Minimum requirements:
12V-80 Ah marine cranking battery
Marine Cold Cranking Amps (MCCA) = CCA622A or greater.

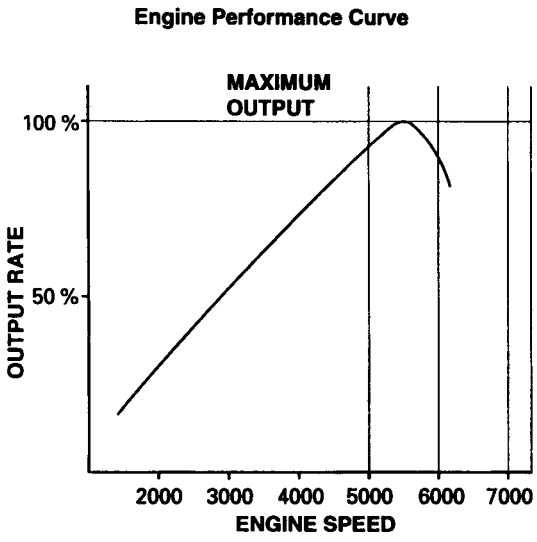
If boat is equipped with two outboard motors, two batteries must be installed, one for each motor.

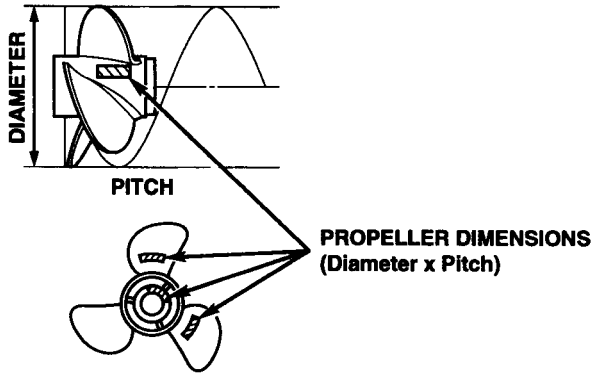


1. Install the battery in the correct size corrosion-resistant battery box, in a dry, well-ventilated location protected from water and direct sunlight.
2. Connect the positive (+) battery cable first, then connect the negative (–) battery cable. Tighten cable nuts securely.
3. Coat battery terminal ends with nonconductive grease. Cover the battery positive + terminal.
4. Secure the corrosion-resistant battery box properly to the boat. To keep potential sparks away from the fuel tank, do not secure or place battery near the fuel tank.

PROPELLER

Propeller Selection





Pitch-Advanced Distance During One Turn (Apparent Advanced Distance)

Pitch Ratio $\frac{P}{D}$ **P: Pitch (mm)**
D: Outer Diameter of Propeller

Slip Ratio $\frac{\text{(Visual Advanced Distance - Measured Distance)}}{\text{Visual Advanced Distance}} \times 100$

During running; the actual advanced distance is reduced by about 10 ~ 15% due to propeller display pitch.

Recommended engine speed range: 5000 ~ 6000 rpm

Engine speed varies with propeller size and boat condition.
A propeller must be selected to adjust maximum engine speed to the recommended engine speed range.
Using the wrong propeller can cause motor damage. The proper propeller will assure powerful acceleration, top speed, good fuel economy, cruising comfort, and longer engine service life.

Propeller Selection Precautions

- The outboard motor must be installed vertically in relation to boat bottom. Set moderate trim angle, and adjust power trim angle to lowest setting.
- Set trim tab, so boat will run in a straight line.
- Protect propeller from foreign objects, check regularly for damage and/or deformation, and aquatic plants wrapped around propeller hub.
- Keep boat bottom clean of shells, algae growth and dirt. Accumulation causes a significant drop in top speed.
- When doing propeller checks, select a calm day with little wave action.
- Avoid strong winds. Wind speed should be less than 10 miles/h (15 km/h).
- The boat should carry its average load (crew, load arrangement, ballast).

Select the correct propeller, so that full throttle engine speed is with the recommended range.

- If engine rpm is under the recommended rpm range, lower propeller pitch by 1 ~ 2 inches or more as needed.
- If engine rpm is over the recommended rpm range, select a propeller with a pitch one size larger or as needed.
- If the following conditions exist, acceleration will improve and outboard motor service life will increase by lowering the propeller pitch.
  - Heavy loads such as crew, load, equipment, water skiing, etc;
  - High temperatures and high humidity conditions;
  - When operating at high altitudes;
  - When boat bottom needs cleaning;
  - When area around gear case is obstructed;

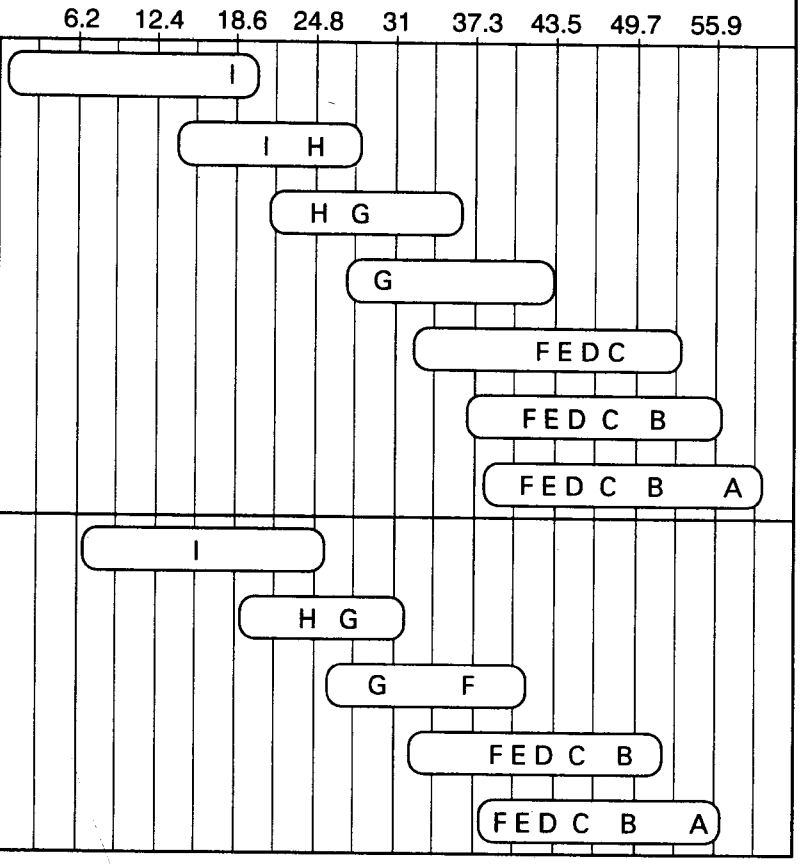
NOTICE

If full throttle engine rpm exceeds the recommended range, it can cause increased vibration, noise, reduced boat performance, poor fuel economy and possible engine wear.

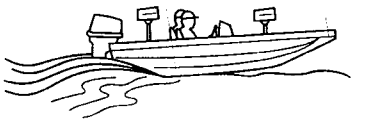
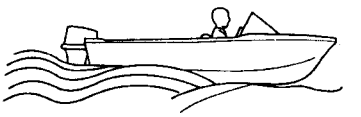
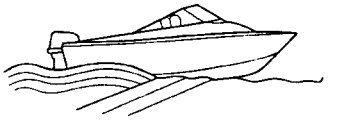
If full throttle engine rpm is below recommended range, it indicates that the engine is being overloaded.

Aluminum Propeller Selection Chart

Outboard motor type	Propeller size Dia. x pitch (in)	Boat speed in mph with engine running between 5000 ~ 6000 rpm
BF130A	14 x 11	1 ~ 20.4
	14 x 13	14.3 ~ 28.7
	13-3/4 x 15	21.7 ~ 36.3
	13-1/4 x 17	27.4 ~ 43.5
	13 x 19	32.5 ~ 50.4
	12-3/4 x 21	36.6 ~ 56.2
	12-1/4 x 23	37.9 ~ 59.4
BF115A	14 x 11	6.6 ~ 26
	14 x 13	19.3 ~ 31.9
	13-3/4 x 15	26.3 ~ 41.5
	13-1/4 x 17	32.3 ~ 49
	13 x 19	38 ~ 56

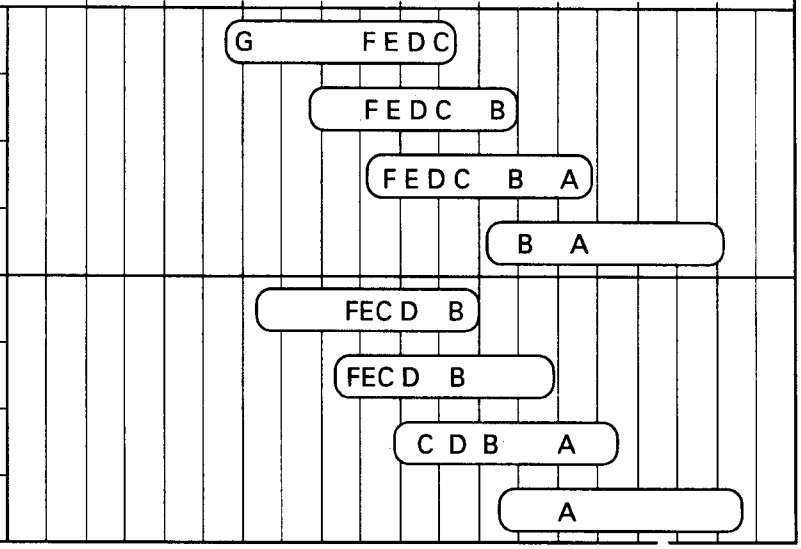


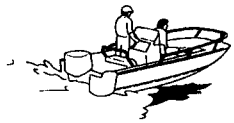
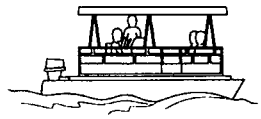
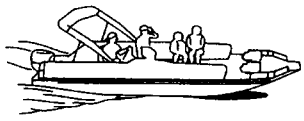
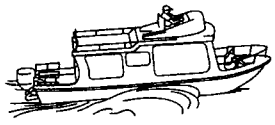
Boat type and applicable size (length and weight)

Code	Boat Type	Overall length (feet)	Weight (pounds)	Hull Shape (Example)
A	Bass boat	16 ~17	1818 ~ 2114	
B	Water ski	16 ~ 17	1873 ~ 2314	
C	Utility	18	2094 ~ 2535	
D	Fishing boat	16 ~ 17	2171 ~ 2314	
E	Runabout	16 ~ 17	2204 ~ 2579	

Stainless Steel Propeller Selection Chart

Outboard motor type	Propeller size Dia. x pitch (in)	Boat speed in mph with engine running between 5000 ~ 6000 rpm
BF130A	13-1/4 X 15	29.8 ~ 47.8
	13-1/4 x 17	36.7 ~ 52.8
	13-1/4 X 19	41 ~ 58.4
	13-1/4 X 21	50.3 ~ 69
BF115A	13-1/4 X 15	32.3 ~ 50
	13-1/4 x 17	38.5 ~ 55.3
	13-1/4 X 19	42.9 ~ 60
	13-1/4 X 21	51.6 ~ 70.2



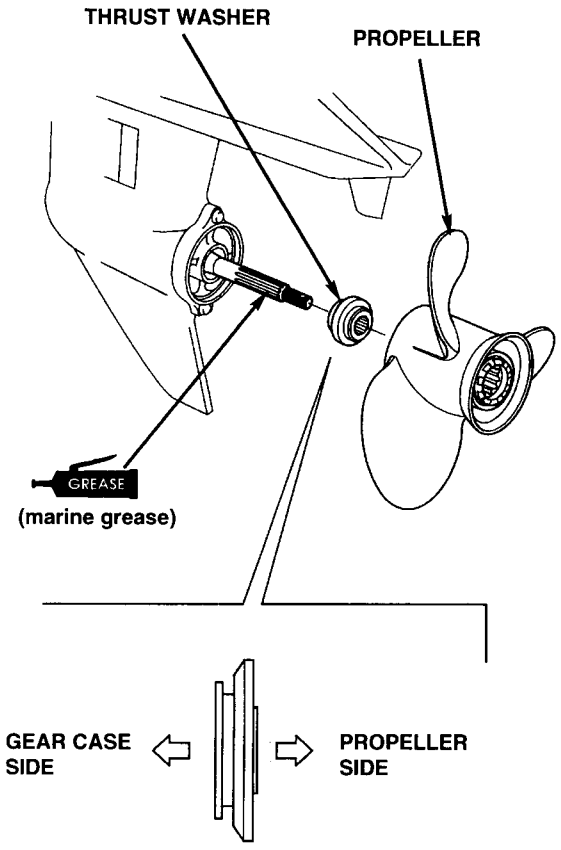
Code	Boat Type	Overall length (feet)	Weight (pounds)	Hull Shape (Example)
F	Center console	17 ~18	2480 ~ 3306	
G	Pontoon boat	24 ~ 28	2954 ~ 5952	
H	Deck boat	19 ~ 26	2590 ~ 6613	
I	House boat	35 ~ 37	11464 ~ 17636	

Propeller Installation

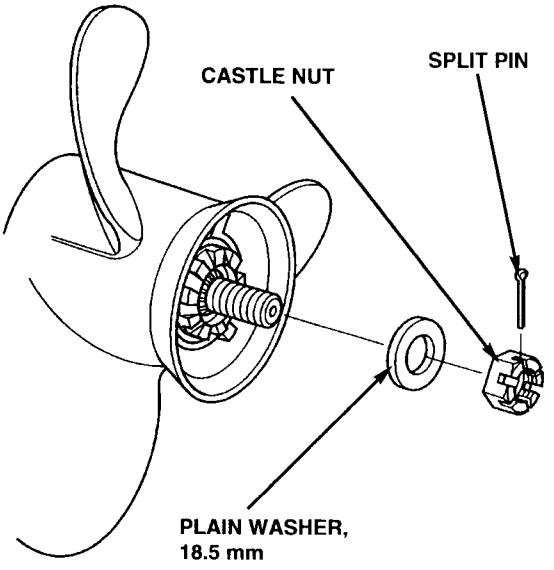
Remove the ignition key and disconnect the spark plug caps to prevent the engine from starting accidentally.

Wear heavy gloves to protect your hands from sharp or nicked propeller blades.

1. Apply marine grease to the propeller shaft.
2. Install the thrust washer and the propeller on the propeller shaft.



3. Install the 18.5 mm plain washer and castle nut.



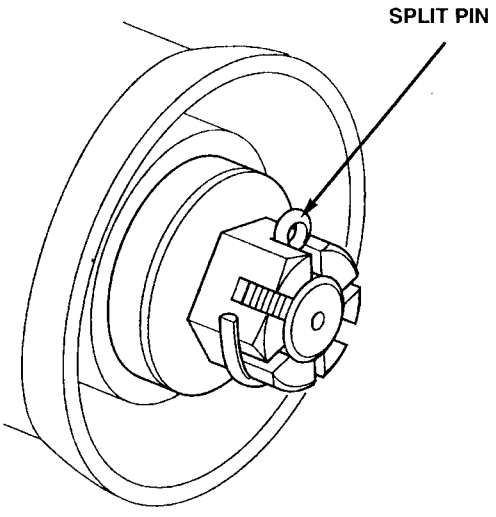
4. Tighten the castle nut and secure with the split pin.

   If the split pin does not align with the hole in the propeller shaft, adjust by turning the nut in the tightening direction. Do not exceed the maximum torque.

   TORQUE:

   Propeller nut: Minimum 0.7 ft-lb (1.0 N·m)
   Maximum 32 ft-lb (44 N·m)

   After installation, bend the split pin ends as shown to secure castle nut.



ADJUSTMENT AFTER INSTALLATION

Trim Angle Adjustment

To get maximum performance in most applications, the transom angle adjusting rod should be positioned in the lowest hole.

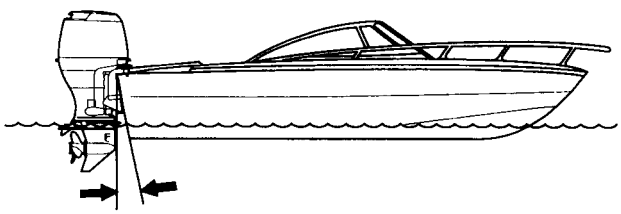
It may be necessary to move the adjusting rod to a higher position due to the following situations:

- To avoid interference when motor is trimmed to lowest position.
- If, due to boat weight or design, boat does not produce increased performance with motor trimmed to lowest hole.

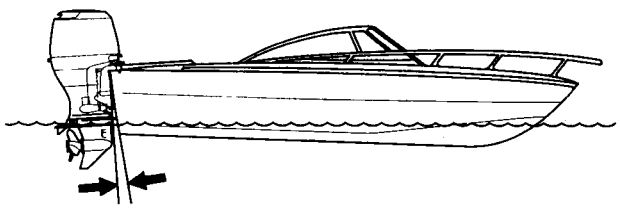
Motor installation angle (trim angle) can be adjusted when stopped or while running. Changing trim angle compensates for wave conditions, wind, boat load, crew number, etc., to ensure optimum handling.

Cruising Characteristics

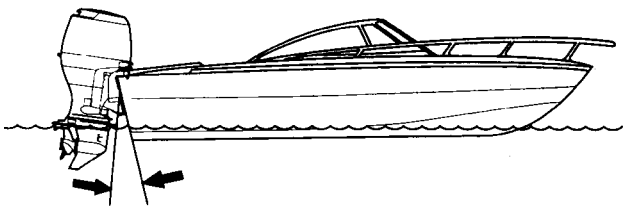
Proper trim angle:
Assures most stable cruising and maximum performance.



Excessive negative trim angle:
Causes unwanted "bow steer".

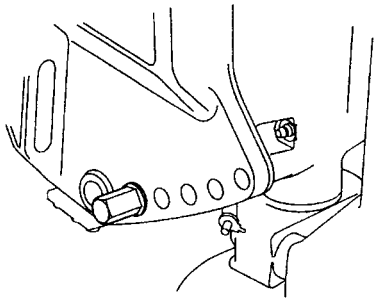


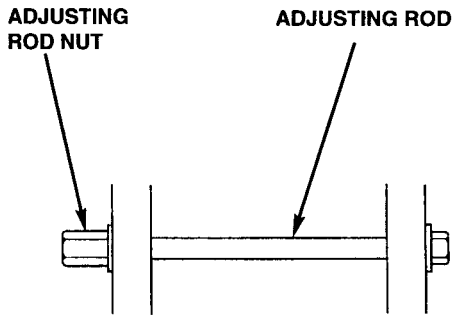
Too large trim angle:
Causes bow rise, which hinders stable cruising, visability, and planing.



Transom Angle Adjusting Rod Removal/Installation

1. Loosen the adjusting rod nut, and remove the adjusting rod.
2. Adjust by inserting the adjusting rod in the suitable holes.





Angle Adjustments:
5 Stages (8°, 12°, 16°, 20° and 24°)

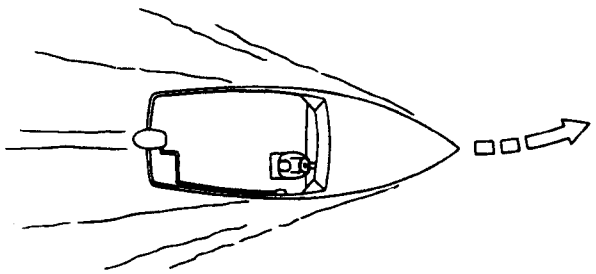
NOTICE

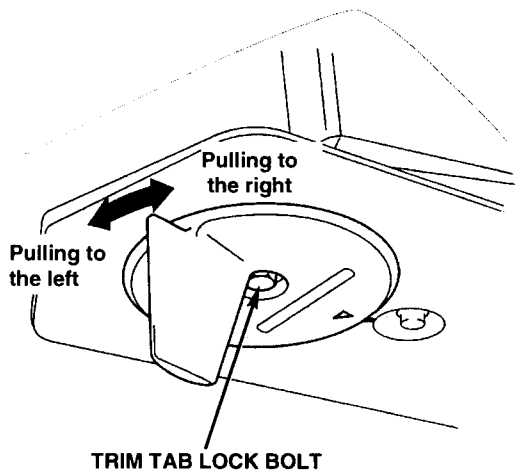
Do not operate the boat without the transom angle adjusting rod installed. Operating the boat without the transom angle adjusting rod installed can result in damage to the power trim/tilt unit.

TRIM TAB ADJUSTMENT

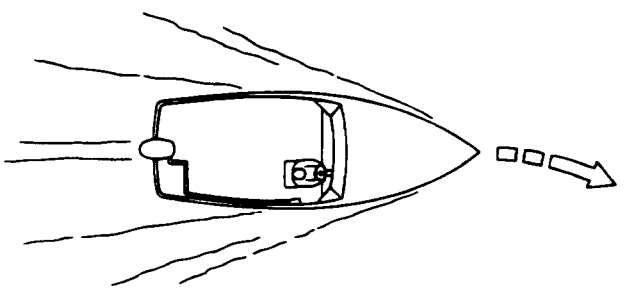
After engine break-in, run boat at full speed, and check to see if boat pulls to the left or right. Adjust trim tab as required, to ensure good, straight running characteristics.

If boat pulls to the left:
Loosen trim tab lock bolt, and move trim tab trailing edge to the left.





If boat pulls to the right:
Loosen trim tab lock bolt, and move trim tab trailing edge to the right.



BREAK-IN PROCEDURE

Break-in period: 10 hours

Break-in operation allows the moving parts to wear-in evenly and thus ensures proper performance and longer outboard motor service life.

First 15 minutes:
Run the outboard motor at trolling speed. Use the minimum amount of throttle opening necessary to operate the boat at a safe trolling speed.

Next 45 minutes:
Run the outboard motor up to a maximum of 2,000 to 3,000 rpm or 10% to 30% throttle opening.

Next 60 minutes:
Run the outboard motor up to a maximum of 4,000 to 5,000 rpm or 50% to 80% throttle opening. Short bursts of full throttle are acceptable but do not operate the motor continuously at full throttle.

Next 8 hours:
Avoid continuous full throttle operation (100% throttle opening). Do not run the outboard motor at full throttle for more than **5** minutes at a time.

For boats that plane easily, bring the boat up on plane, then reduce the throttle opening to the specified break-in settings called out above.

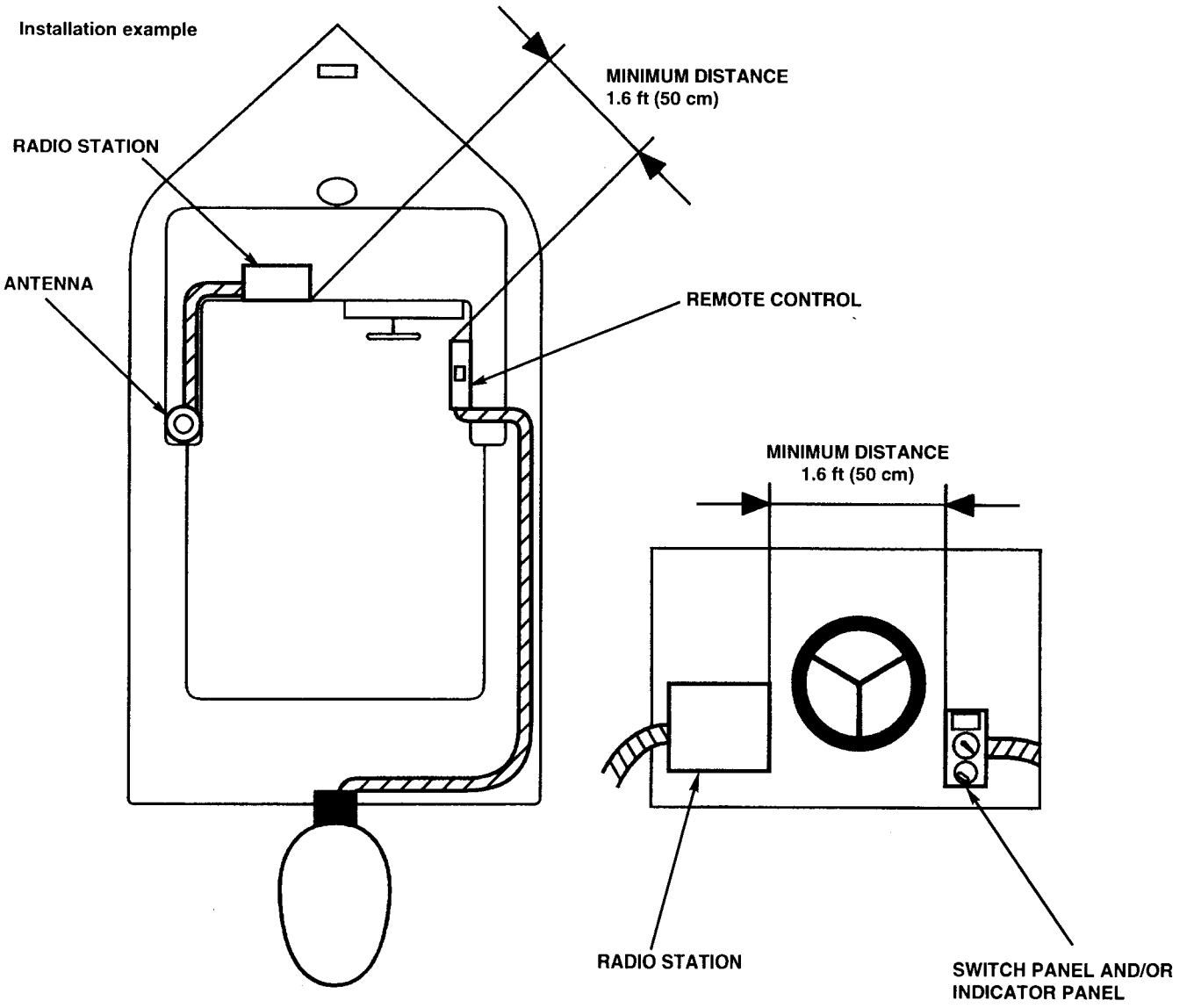
RADIO STATION MOUNTING/USAGE

The Electronic Control Unit (ECU) is installed on the engine. The ECU and the ECU wires are designed so that they are not affected by external jamming, but the ECU can malfunction when it receives an extremely strong electronic signal wave. Check the ECU for any malfunctions whenever a VHF radio station is used on the boat.

Observe the following instructions to prevent the ECU from malfunctioning.

- Keep the antenna and radio station at least 1.6 ft (50 cm) or more away from the ECU, switch panel wire harness, indicator wire harness, switch panel, indicator panel or remote control.
- Avoid routing antenna wire too long a distance. The antenna wire should not be routed as long as the panel wire harnesses.
- Do not install a radio station that does not conform to local laws and regulations (10W or less).
- Connect the positive and negative radio leads to the boat wiring harness not the engine related wiring harnesses.
- After installing a radio station, the ECU must be checked for any malfunctions by running the engine and transmitting from the radio. If the engine performance is adversely effected during radio transmission, inspect radio for proper installation location, settings, and general operation.

Installation example



PRE-DELIVERY SERVICE CHECK LIST

Check all items on the following list. Refer to the Owner's Manual or Shop Manual for specifications and detailed procedures. Test every unit to be sure it is functioning properly.

If proper off season PGM-FI storage procedures are needed, refer to the storage chapter of the BF115/130 Owner's Manual.

ON LAND

☐ After completing the Pre-Delivery Service and Operation check lists, fill out the HONDA MARINE - Delivery Check List (#TM023). Give the yellow copy to the customer.

- **EXTERNAL APPEARANCE**

☐ Check for paint scratches; touch up if necessary.

- **INSTALLATION LOCATION**

☐ Check for correct installation location.

☐ Check outboard motor for correct installation height.

☐ Make sure the motor mounting bolts are tight.

☐ Check to be sure sealant has been applied to the transom mounting bolt holes.

- **GEAR OIL**

☐ Check for proper gear oil level. Make sure the oil level and drain plugs are tight.
OIL CAPACITY: 1.06 US qt. (1.0 ℓ)
Use a commercially available gear oil that meets or exceeds the requirement for API Service Classification GL5 or Honda P/N 92-19007A12 H/C 4918363 gear oil.

- **FUEL SYSTEM**

☐ Be sure fuel lines are connected securely.

☐ Make sure the fuel tank is full of fresh 86 pump octane rating or higher unleaded gasoline.

☐ Check for fuel leaks. If necessary, repair immediately.

- **STEERING SYSTEM**

☐ Check the steering system for smooth operation.

☐ Make sure the outboard motor does not interfere with the steering cable and/or link arm, control cables, wire harness etc., when the steering wheel is turned full left and full right and with the motor in all tilt positions.

- **REMOTE CONTROL SYSTEM**

☐ Check remote control for proper operation.

☐ Make sure the control lever selects forward, neutral, and reverse gears.

☐ Check for full throttle capability.

☐ Check to be sure the throttle operates smoothly with the remote control lever at full throttle position. On side-surface mount controls, the fast idle lever must be in the idle position.

- **ELECTRICAL SYSTEM**

☐ Check wire harness for proper connections.

☐ Check battery connections for correct polarity and tightness.

☐ Make sure battery is fully charged and installed securely.

☐ Make sure meters, indicators, and switches are connected correctly.

- **TILT MECHANISM**

☐ Push power trim/tilt switch, and make sure outboard motor tilts up and down smoothly.

☐ Check for abnormal tilt motor noise while tilting up or down.

☐ Tilt down the outboard motor and check to see that the trim meter functions and indicates "DOWN".

☐ Operate the steering with the outboard motor in the tilt UP position, and check to be sure that the cables, harnesses, boat splashwell, etc. do not interfere with the outboard motor.

☐ Make sure tilt stopper will set in the lock position at full tilt up position.

☐ Check the power tilt oil level. Tilt the outboard motor up to the full tilt UP position and lock it in place with the tilt lock lever. Remove the oil tank cap and be sure the oil level is up to the oil filler port. Install the oil tank cap securely.
Recommended Oil: DEXRON® type Automatic Transmission Fluid (ATF).

☐ Check the manual tilt valve for proper function.

- **ENGINE OIL**

☐ Check engine oil level.
Engine Oil Capacity:
5.9 US qt. (5.6 ℓ) When oil filter is not replaced
6.2 US qt. (6.5 ℓ) When oil filter is replaced
Recommended Oil: SAE 10W-30
Use 4-stroke motor oil that meets or exceeds the requirement for API Service Classification SJ. Always check the API SERVICE label on the oil container to be sure it includes the letters SJ.

- **ALL NUTS, BOLTS, & OTHER FASTENERS**

☐ Check security and tighten if necessary.

OPERATION CHECK LIST

IN THE WATER

- **OUTBOARD MOTOR INSTALLATION**

☐ Check that there are no water leaks from the motor mounting bolt holes.

☐ Check boat for balanced weight distribution.

- **OUTBOARD MOTOR OPERATION**

☐ Check neutral switch for proper operation.

☐ Turn the ignition switch ON and make sure the buzzer sounds twice. Turn switch OFF.

☐ Turn the ignition switch ON. Make sure the Programmed Fuel Injection (PGM-FI) light, Alternating Current Generator (ACG) light, and the Oil Pressure light come on. The oil pressure light should go out after 2 seconds.

☐ Turn the ignition switch to the START position and start the engine.

☐ Check outboard motor for any abnormal noise.

☐ Check to be sure cooling water flows out of the cooling system indicator.
After the engine warms up:

- ☐ Make sure motor returns smoothly to idle.
- ☐ Check Idle Speed: 750 ± 50 rpm (in neutral)
  If idle speed is incorrect, disconnect remote control throttle cable from throttle arm and recheck idle rpm. If rpm is correct, recheck remote control throttle cable adjustment. If idle rpm is not correct with remote control throttle cable disconnected, refer to the BF115/130 service manual for PGM-FI idle speed adjustment. If necessary, call Honda Tech Line. Do not make adjustments to the PGM-FI without reviewing the service manual or calling Honda Tech Line.
- ☐ Snap throttle and check engine response.

☐ Check the emergency engine stop switch for proper operation.

- **LEAKS**

☐ Make sure that there are no leaks from the fuel lines and/or connections. If necessary, repair immediately.

☐ Check the outboard motor for water/oil leaks. Repair if necessary.

☐ Check exhaust system for exhaust leaks.

DURING SEA TRIALS

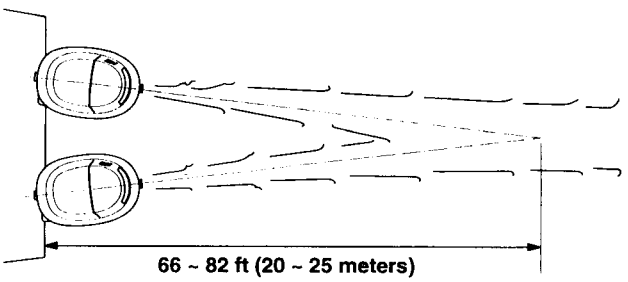
- **OUTBOARD MOTOR OPERATION**

☐ Check the gearshift operation with the remote control lever.

☐ Check motor operation at trolling speed. Use the minimum amount of throttle opening necessary to operate boat at a safe trolling speed for 15 minutes.

☐ Dual Motors:
Adjust tie bar length so the motors toe-out. Toe-out is when the motors' forward measurement is wider than the motors' aft measurement.

Motors with toe-out (viewed from the stern) will ensure better boat stability. It is best if the wakes of two motors join 66 ~ 82 ft (20 ~ 25 meters) astern.



Not all boats will follow this specification. Consult your boat manufacturer for toe-in or toe-out recommendation.

- **PROPELLER SELECTION**

☐ Check the engine rpm with the boat under way. Before engine break-in, avoid continuous full throttle operation (100% throttle opening). Do not run the outboard motor at full throttle for more than **2** minutes at a time.

MAXIMUM RECOMMENDED ENGINE RPM
5000 ~ 6000 rpm

☐ Make sure that there is no propeller ventilation in a straight line. There is the possibility of some propeller ventilation when turning at full throttle with the motor trimmed out.

AFTER SEA TRIALS

- **CHECK & CLEAN THE OUTBOARD MOTOR**

☐ Check that there is no water in the gear oil.

☐ Check that there are no signs of fuel, oil or water leaks. Repair if necessary.

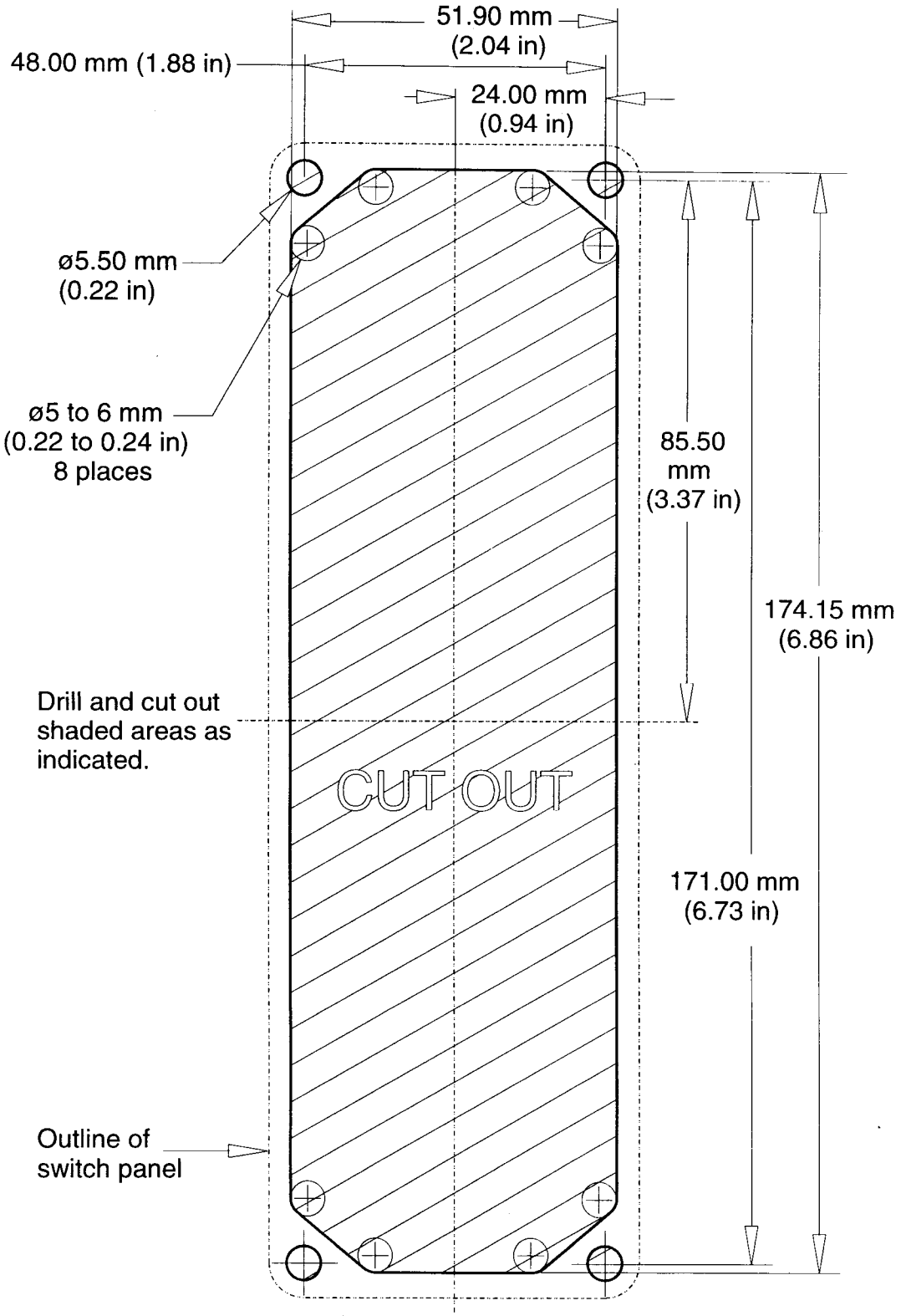
☐ After running in salty or dirty water, use a water hose joint (optional part) P/N 19270-ZW1-740 H/C 4898219 to flush the cooling system with clean water.

☐ Thoroughly clean entire outboard motor with cloth.

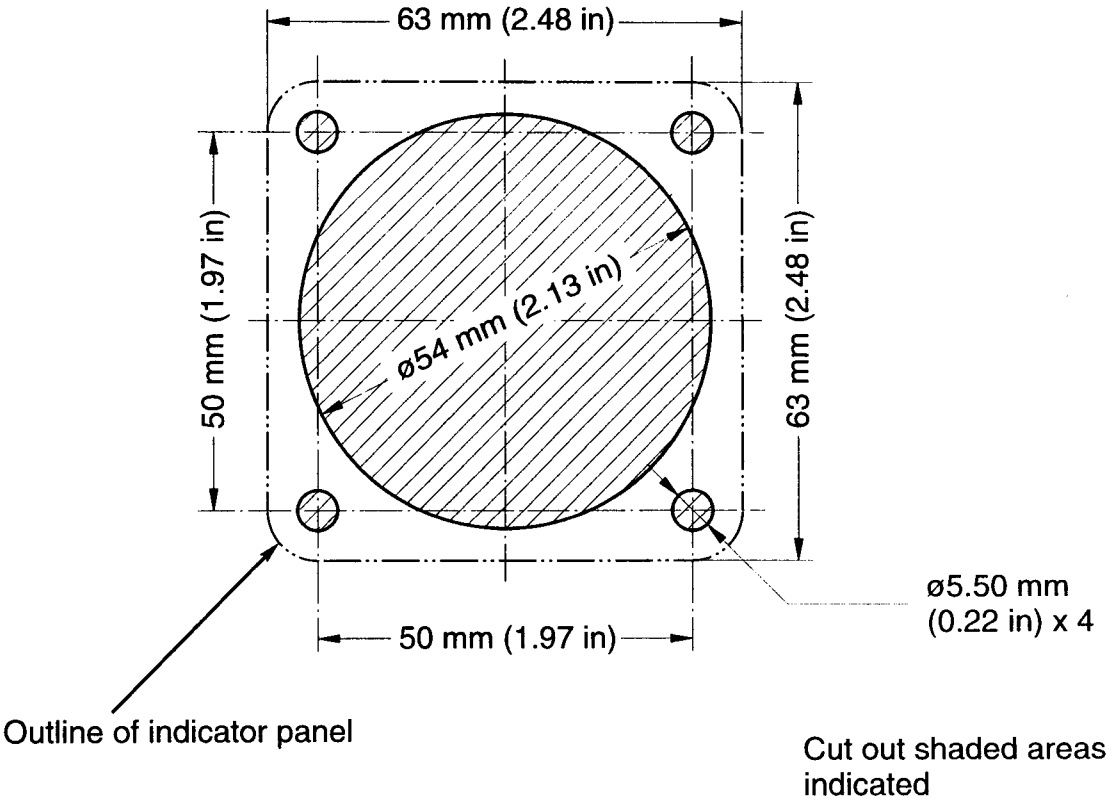
☐ Check the outboard motor for external damage, defects, or cracks.

SWITCH PANEL TEMPLATE

Prior to use, always measure template dimensions with a caliper or ruler to be sure dimensions are correct. Dimensions can change due to photocopying or reprinting.

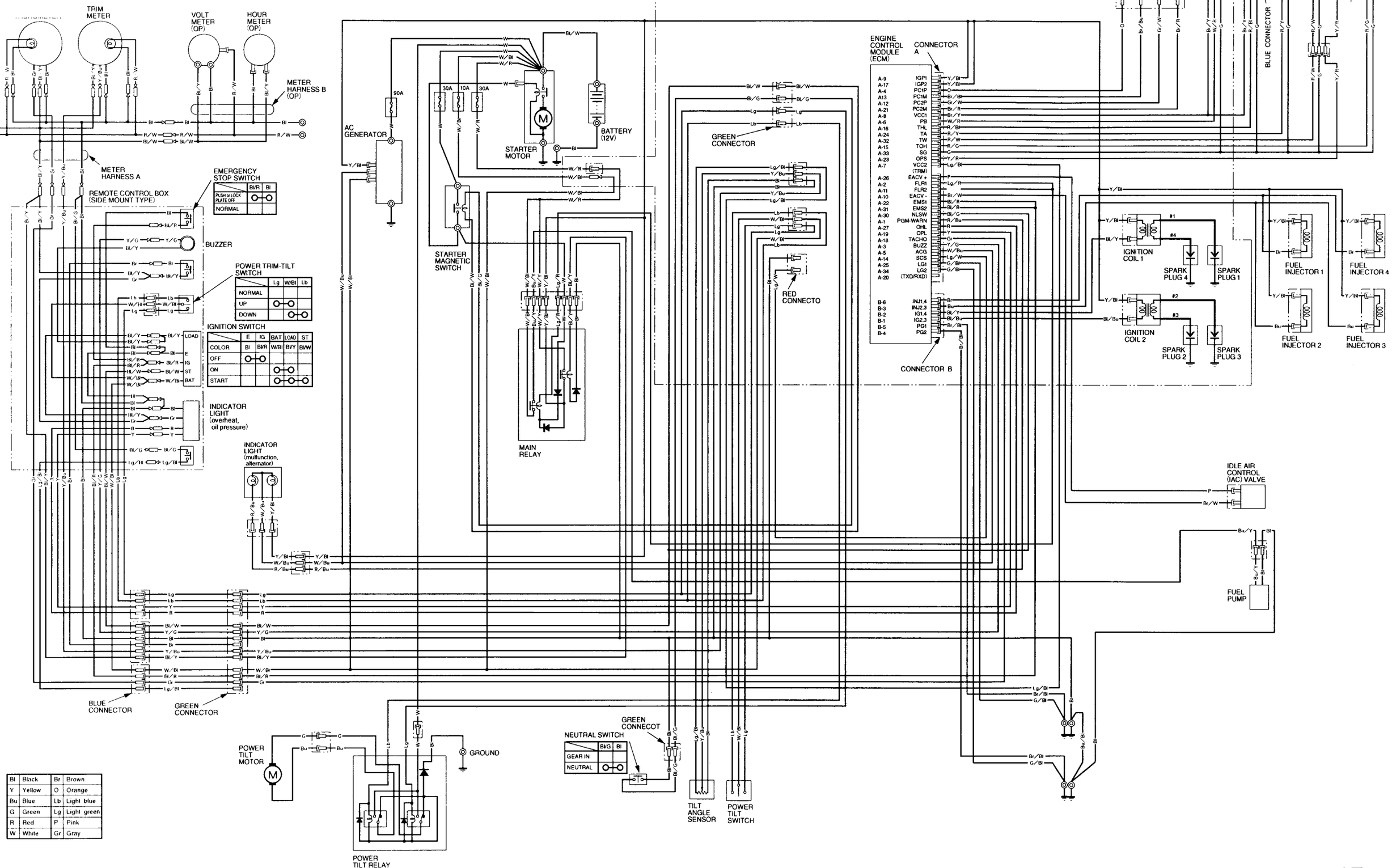


INDICATOR PANEL TEMPLATE



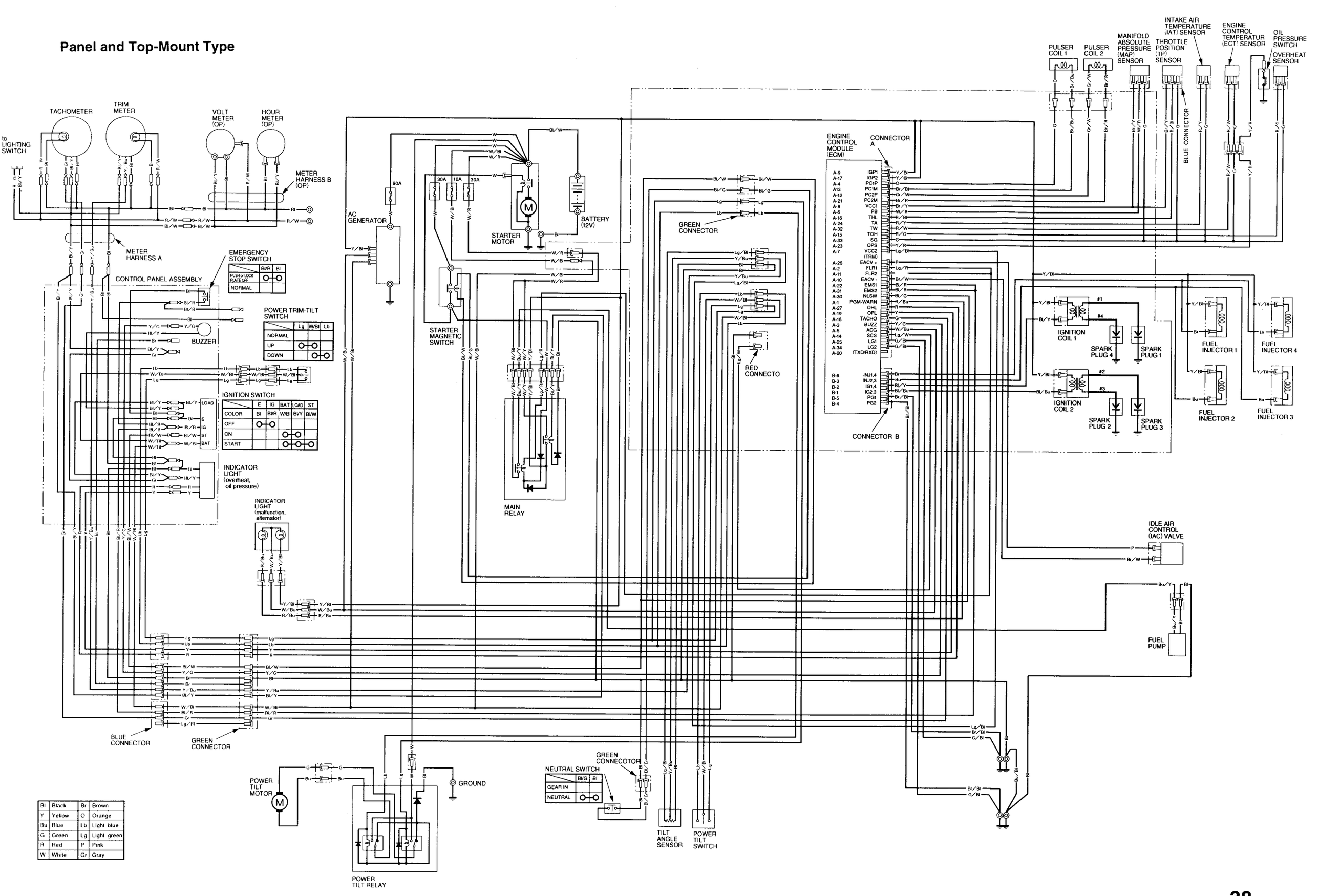
WIRING DIAGRAMS

Side Surface-Mount Type



Bl	Black	Br	Brown
Y	Yellow	O	Orange
Bu	Blue	Lb	Light blue
G	Green	Lg	Light green
R	Red	P	Pink
W	White	Gr	Gray

Panel and Top-Mount Type



Bl	Black	Br	Brown
Y	Yellow	O	Orange
Bu	Blue	Lb	Light blue
G	Green	Lg	Light green
R	Red	P	Pink
W	White	Gr	Gray

IMPORTANCE OF PROPER SET-UP AND PRE-DELIVERY SERVICE

For Your Customer's Safety

Proper set-up and pre-delivery service are essential to the customer's safety and the reliability of the outboard motor. Any error or oversight during assembly can result in faulty operation, damage to the outboard motor, or injury to others.

⚠ WARNING

Improper set-up or pre-delivery service can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Some of the most important general safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing set-up and pre-delivery service. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

IMPORTANT SAFETY PRECAUTIONS

- Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any set-up or pre-delivery service, be especially careful of the following:
  - ☐ Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
  - ☐ Protect your eyes by using proper safety glasses, goggles, or face shields any time you hammer, drill, grind, or work around pressurized air or liquids, and springs or other stored-energy components. If there is any doubt, put on eye protection.
  - ☐ Use other protective wear when necessary, for example, gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:
  - ☐ Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
  - ☐ Burns from hot parts. Let the engine and exhaust system cool before working in those areas.
  - ☐ Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers, and clothing are out of the way.
- Gasoline vapors and hydrogen gases from batteries are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline.
  - ☐ Use only a nonflammable solvent, not gasoline, to clean parts.
  - ☐ Never drain or store gasoline in an open container.
  - ☐ Keep all cigarettes, sparks, and flames away from the battery and all fuel-related parts.